

حمل الآن

مجاناً وحصرياً

امتحانات رقم (1)

الترم الاول





First

Multiple choice questions

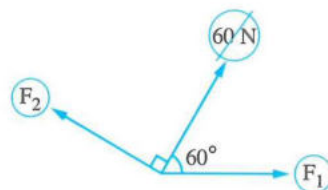
1 mark for each question

- (1) Two perpendicular forces of equal magnitudes, the sum of their magnitudes is $2F$, then the magnitude of their resultant =

(a) $2F^2$ (b) $4F^2$ (c) $4F$ (d) $\sqrt{2}F$

- (2) In the opposite figure :

By resolving the force of magnitude 60 newton into two components of value F_1 , F_2 newton making angles of 60° , 90° from both sides, then $F_2 = \dots\dots\dots$ newton.



(a) 120 (b) $60\sqrt{3}$ (c) $130\sqrt{3}$ (d) $120\sqrt{3}$

- (3) If $\vec{F}_1 = 3\vec{i} - 2\vec{j}$, $\vec{F}_2 = a\vec{i} - \vec{j}$, $\vec{F}_3 = 4\vec{i} - b\vec{j}$, $\vec{R} = 6\vec{i} - 4\vec{j}$, then $(a, b) = \dots\dots\dots$

(a) $(1, -1)$ (b) $(-1, 1)$ (c) $(-1, -1)$ (d) $(1, 1)$

- (4) The angle of friction is

- (a) The included angle between the resultant reaction and the normal reaction in case the friction is limiting.
 (b) The included angle between the resultant reaction and the limiting friction force.
 (c) The ratio between the normal reaction and the limiting friction force.
 (d) The ratio between the static coefficient friction and kinetic coefficient friction.

- (5) If the force of magnitude F is in equilibrium with two forces of magnitudes 10 and 6 newton and the measure of the angle between them is 60° , then $F = \dots\dots\dots$ newton.

(a) $\sqrt{38}$ (b) $\sqrt{68}$ (c) 29 (d) 14

- (6) The magnitude of two forces are $3F$, $5F$ newton and the measure of the angle included is θ and their resultant is $2F$, then $\theta = \dots\dots\dots$

(a) 180° (b) 60° (c) 90° (d) $zero^\circ$

- (7) The number of planes which contains the faces of hexagonal pyramid is

(a) 6 (b) 7 (c) 8 (d) an infinite number

- (8) The number of planes that are containing a straight line is

(a) 1 (b) 2 (c) 3 (d) an infinite number

(9) The point which lies on the circle : $(x-2)^2 + y^2 = 13$ is

- (a) (2, 3) (b) (3, -2) (c) (2, 5) (d) (4, 3)

(10) A regular quadrilateral pyramid its perimeter of its base 36 cm. , its height = 10 cm. , then its volume = cm^3

- (a) 810 (b) 180 (c) 360 (d) 270

(11) A right cone its height is 24 cm. , and the length of its drawer is 26 cm. , then its volume = cm^3

- (a) 200π (b) 250π (c) 500π (d) 800π

Second

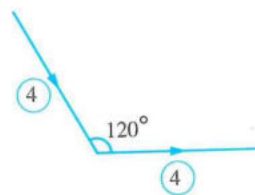
Multiple choice questions

2 marks for each question

(12) In the opposite figure :

The magnitude of the resultant = N

- (a) 8 (b) 4
(c) zero (d) $4\sqrt{3}$



(13) A weight of magnitude W newton is suspended

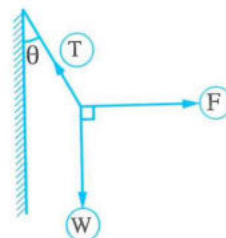
in one end of a string and the other end of the string fixed in a point on a vertical wall

, the weight pulled by a horizontal force of magnitude

F newton till the string become makes an angle θ with the vertical.

Which of the following statement is not correct in equilibrium state ?

- (a) $T = F + W$ (b) $\vec{W} + \vec{F} + \vec{T} = 0$ (c) $T^2 = F^2 + W^2$ (d) $F = W \tan \theta$



(14) A body of weight 20 kg.wt. is suspended by two perpendicular strings , if the measure of the angle between one string and the line of the weight is 120° , then the magnitude of the tension of this string equals

- (a) 20 (b) 10 (c) $10\sqrt{3}$ (d) $20\sqrt{3}$

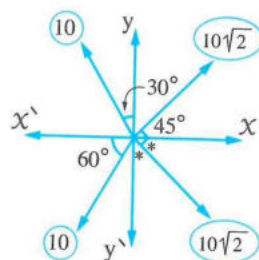
(15) A metallic sphere of weight 20 kg.wt. is placed so that it touches two smooth planes , one of them is vertical and the other inclines to the vertical at angle of measure 30° , then the reactions of the two planes equals

- (a) $\{40, 20\sqrt{3}\}$ (b) $\{20, 40\}$ (c) $\{40, 10\}$ (d) $\{20, 10\sqrt{3}\}$

(16) In the opposite figure :

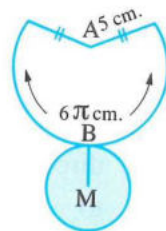
If the forces measured by newton , then
the magnitude of the resultant of
the forces = Newton.

- (a) zero (b) 10
(c) $10\sqrt{2}$ (d) 20



(17) The opposite net describes a solid its volume $\pi \text{ cm}^3$

- (a) 30 (b) 12
(c) 15 (d) 36



(18) a $x^2 + 2y^2 + 4x + (b-4)xy - 8y + c + 2 = 0$ is equation of a circle
which passes through the origin point , then $a + b + c = \dots\dots\dots$

- (a) 2 (b) 3 (c) 4 (d) 5

Third Essay questions

(19) The edge length of the triangular regular faces pyramid equals 12 cm. find its volume.

(20) A body of weight 26 newton is placed on a rough horizontal plane is acted on it by two
forces of magnitudes 14 , 16 newton and the angle between them is 60° and lie on the same
horizontal plane of the body. If the body is about to move , find the angle of friction.

2 Cairo Governorate

El-Khalifa and El-Mokatam
Administration



First Multiple choice questions *1 mark for each question*

(1) Two forces meet at a point their magnitudes 12 , 6 newton and the resultant is
perpendicular to one of them , the magnitude of the resultant = Newton.

- (a) 6 (b) $6\sqrt{3}$ (c) 12 (d) $12\sqrt{3}$

(2) Two forces of F , $F \text{ kg.wt.}$ and their resultant equals 48 kg.wt. and makes with the first
force an angle of 30° , then $F = \dots\dots\dots \text{ w.kg.}$

- (a) 16 (b) $16\sqrt{3}$ (c) $16\sqrt{2}$ (d) 24

(3) If A is the angle between the two forces 2 , 6 N where $A \in]0 , \pi]$, then the magnitde
of the resultant $\in \dots\dots\dots$

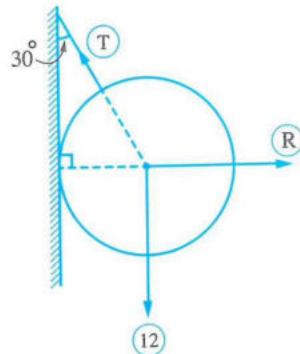
- (a) $]4 , 8[$ (b) $[4 , 8[$ (c) $]4 , 8]$ (d) $[4 , 7]$

- (4) If the total area of a pyramid of regular faces = $36\sqrt{3} \text{ cm}^2$, the sum of its edges lengths = cm.
 (a) 6 (b) 12 (c) 18 (d) 36
- (5) A right cone with a volume of $27\pi \text{ cm}^3$ and a circumference of its base $6\pi \text{ cm}$, its height = cm.
 (a) 27 (b) 18 (c) 9 (d) 6
- (6) The point that lies on the circle $(x-3)^2 + (y+2)^2 = 32$ of the following points
 (a) (3, 4) (b) (5, 3) (c) (7, 2) (d) (1, 2)
- (7) An inclined plane with a length of 50 cm. and a height of 30 cm. and an object weighing 200 kg.wt. placed on it, the sum of the magnitudes of the two weight components in the direction of the line of the greatest slope of the plane and the normal direction to it is equal to kg.wt.
 (a) 200 (b) 160 (c) 120 (d) 280
- (8) The perimeter of the base of a regular quadrilateral pyramid is of 24 cm. and its height is 12 cm., then its volume = cm^3 .
 (a) 288 (b) 144 (c) 108 (d) 72
- (9) The circumference of the circle whose equation is : $x^2 + y^2 + 2x - 2y - 2 = 0$ is unit length.
 (a) π (b) 2π (c) 4π (d) 8π

(10) In the opposite figure :

If a solid ball is in a position of equilibrium and the wall is vertical smooth, then $T - R = \dots\dots\dots$ newton.
 Where R is the wall reaction to the ball.

- (a) $8\sqrt{3}$ (b) $4\sqrt{3}$
 (c) 4 (d) 8



- (11) A body weighing $2\sqrt{3} \text{ kg.wt.}$ placed on a rough horizontal plane affected by a horizontal force of magnitude 2 kg.wt., it made the body about to move, the magnitude of the resultant reaction force obtained = kg.wt.
 (a) 2 (b) 8 (c) 4 (d) $8\sqrt{3}$

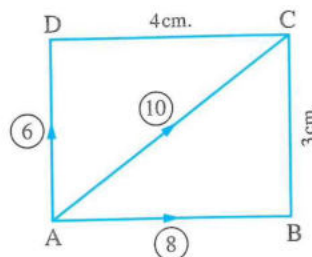
Second Multiple choice questions

2 marks for each question

- (12) In the figure : ABCD rectangle AB = 4 cm., BC = 3 cm.

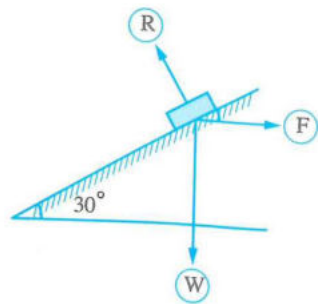
The forces of magnitudes 6, 10, 8 newton affected in $\overrightarrow{AD}$, $\overrightarrow{AC}$, $\overrightarrow{AB}$ respectively, the resultant force makes with $\overrightarrow{AB}$ an angle of measure $\simeq \dots\dots\dots$

- (a) 39° (b) 53° (c) 28° (d) 37°



- (13) An object weighing 18 newton placed on a smooth inclined plane inclined to the horizontal at an angle 30° is balanced by the action of a horizontal force F newton, then $F + R = \dots\dots\dots$ newton.

- (a) $6\sqrt{3}$ (b) $12\sqrt{3}$
(c) $18\sqrt{3}$ (d) $24\sqrt{3}$

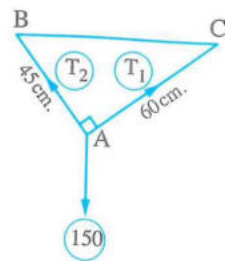


- (14) Two forces of magnitude 12, F newton acting at a point, the first in the direction of the east and the second acting in the direction of 60° south of the west and their resultant in the direction of 30° south of the east. $F = \dots\dots\dots$ newton.

- (a) 6 (b) $6\sqrt{3}$ (c) 12 (d) $12\sqrt{3}$

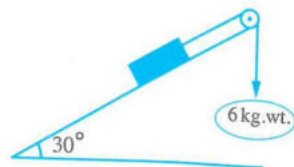
- (15) A body weighing 150 kg.wt. balanced with a tie with two perpendicular string of lengths 60 cm., 45 cm. and the ends of the two strings C , B are on one horizontal line, then $T_2 - T_1 = \dots\dots\dots$ kg.wt.

- (a) 120 (b) 90
(c) 60 (d) 30



- (16) An object of mass 19 kg. placed on a rough inclined plane and connected by a light string passing over a smooth pulley at the edge of the plane hangs from the other end of the string a body of mass 6 kg. If the group is equilibrium, the magnitude and the direction of the frictional force is $\dots\dots\dots$

- (a) 3.5 kg.wt. for the up level. (b) 3.5 kg.wt. down level.
(c) 8.5 kg.wt. for the up level. (d) 8.5 kg.wt. down level.



- (17) The volume of a right circular cone with a slant length = 15 cm. and a total area = $216\pi \text{ cm}^2$ is equal to $\dots\dots\dots \pi \text{ cm}^3$

- (a) 205 (b) 220 (c) 280 (d) 324

- (18) The equation of a circle that is the image of the circle : $x^2 + y^2 - 12x + 6y + 20 = 0$ by translation $(x + 2, y - 2)$

- (a) $(x + 8)^2 + (y + 5)^2 = 25$ (b) $(x - 8)^2 + (y + 5)^2 = 25$
(c) $(x - 8)^2 + (y - 5)^2 = 25$ (d) $(x + 5)^2 + (y - 8)^2 = 25$

Third Essay questions

- (19) A regular quadrilateral pyramid with a volume of 384 cm^3 and the side length of its base is 12 cm. Find the total area.

- (20) An object weighing 30 kg.wt. placed on a rough inclined plane makes an angle with the horizontal of measure $\sin^{-1} = \left(\frac{3}{5}\right)$ if the coefficient of friction = $\frac{1}{6}$ find the least force acting in the direction of the line of the greatest slope up and prevent the body from slipping.

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Giza Governorate

Maths Inspection

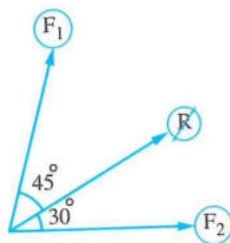


First

Multiple choice questions

1 mark for each question

- (1) Two perpendicular forces of magnitudes 12 newton, 5 newton, act at a point, then the magnitude of their resultant
- (a) 7 (b) 13 (c) 14 (d) 17
- (2) If μ_s, μ_k are static and kinetic coefficients of friction respectively of two bodies touching each other, then
- (a) $\mu_s = \mu_k$ (b) $\mu_s < \mu_k$ (c) $\mu_s > \mu_k$ (d) $\mu_s + \mu_k = 1$
- (3) Three forces are equal in magnitude and meeting at a point are in equilibrium, then the measure of the angle between any two of them is°
- (a) 60 (b) 90 (c) 120 (d) 150
- (4) Two forces of equal magnitudes, enclosing between them an angle of measure $\frac{\pi}{2}$ if their resultant is 8 newton, then the value of each force is newton.
- (a) 4 (b) 8 (c) $2\sqrt{2}$ (d) $4\sqrt{2}$
- (5) In the opposite figure :
- The resultant $R = 12$ newton
- , then $F_1 = \dots\dots\dots$
- (a) $12 \cos 75^\circ$ (b) $12 \csc 75^\circ$
- (c) $6 \csc 75^\circ$ (d) $6 \cos 75^\circ$
- (6) Two forces of magnitudes : $3F - 1, F + 5$ newton, if their resultant bisects the angle between them, then the value of $F = \dots\dots\dots$ newton.
- (a) 2 (b) 3 (c) 4 (d) 5
- (7) A triangular pyramid of regular faces, length of its edge is 12 cm., then its total surface area = cm^2 .
- (a) 144 (b) $144\sqrt{2}$ (c) $144\sqrt{3}$ (d) $144\sqrt{6}$
- (8) The circumference of the circle whose equation : $(x - 3)^2 + (y + 2)^2 = 25$ is
- (a) 5π (b) 10π (c) 15π (d) 25π
- (9) A right circular cone, the length of its drawer 10 cm. and its height 8 cm., then the volume cm^3 .
- (a) 30π (b) 40π (c) 80π (d) 96π



(10) All the following cases determine a plane except

- (a) A straight line and a point does not belong to it.
- (b) Two parallel and not coincident straight lines.
- (c) Two intersecting straight lines.
- (d) Two skew straight lines.

(11) A regular quadrilateral pyramid the perimeter of its base = 40 cm. and its height 12 cm. , then lateral surface area = cm^2

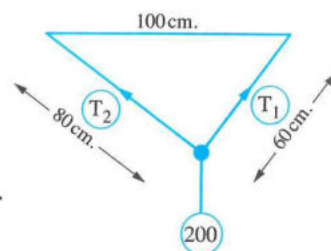
- (a) 200
- (b) 240
- (c) 260
- (d) 320

Second Multiple choice questions

2 marks for each question

(12) In the opposite figure :

A weight of a magnitude 200 gm.wt. is suspended by two strings of lengths 60 cm. and 80 cm. , from two points on one horizontal line where the distance between them is 100 cm. , then $T_1 - T_2 = \dots\dots\dots$



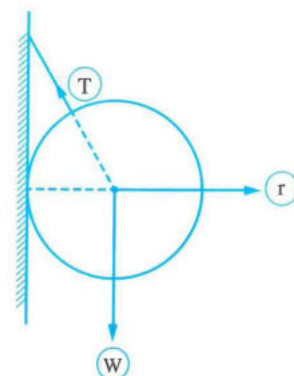
- (a) 160
- (b) 120
- (c) 80
- (d) 40

(13) $\vec{F}_1 = \hat{i} - \hat{j}$, $\vec{F}_2 = 2\hat{i} - 3\hat{j}$, then the magnitude of their resultant =

- (a) 12
- (b) 7
- (c) 5
- (d) 4

(14) In the opposite figure :

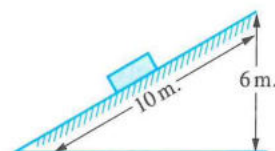
A solid uniform sphere of weight 15 kg.wt. and radius length 5 cm. is in equilibrium by a string of length 5 cm. attached to a point of its surface and the other end of the string is fixed at a point in the vertical smooth plane above the tangency point , then $\frac{r}{T} = \dots\dots\dots$



- (a) 1 : 2
- (b) 1 : 3
- (c) $1 : \sqrt{2}$
- (d) $1 : \sqrt{3}$

(15) In the opposite figure :

The body is about to slide downwards , then the coefficient of static friction =



- (a) $\frac{3}{5}$
- (b) $\frac{4}{5}$
- (c) $\frac{3}{4}$
- (d) $\frac{4}{3}$

(16) In the opposite figure :

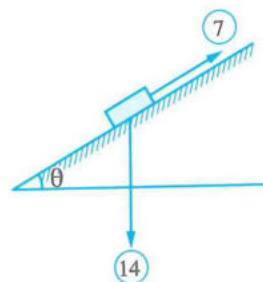
The body is in equilibrium on a smooth inclined plane
 , then : $\theta = \dots\dots\dots^\circ$

(a) 60

(b) 90

(c) 45

(d) 30



(17) A regular quadrilateral pyramid the area of each of its lateral faces equals the area of its base ,
 and the perimeter of the base is 24 cm. , then the volume of the pyramid = cm^3

(a) 36

(b) $6\sqrt{3}$

(c) $36\sqrt{15}$

(d) $72\sqrt{3}$

(18) If the ΔOAB rotates a complete rotation about X -axis where the equation of $\overleftrightarrow{AB}$
 is $\frac{x}{4} + \frac{y}{3} = 1$, then the volume of the resultant solid is $\pi \text{ cm}^3$

(a) $\frac{16}{3}$

(b) 16

(c) 12

(d) 6

Third

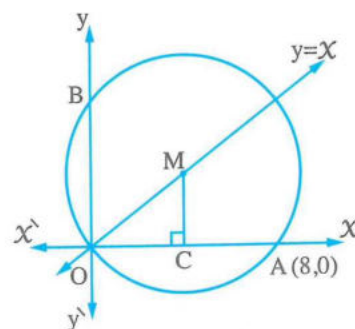
Essay questions

(19) The forces of magnitudes F , 6 , $4\sqrt{2}$, $5\sqrt{2}$ and K measured in newton are act at a point
 in the directions east , north , north west , west south and south respectively. Find the
 values of F and K if the resultant of forces = 2 newton act in north direction.

(20) In the opposite figure :

A circle its center $M \in$ the straight line $y = x$
 , $\overrightarrow{MC} \perp \overrightarrow{OA}$

Find the equation of the circle.



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Giza Governorate

6 October Educational Administration
 Maths Inspection



First

Multiple choice questions

1 mark for each question

(1) In the oppostie figure :

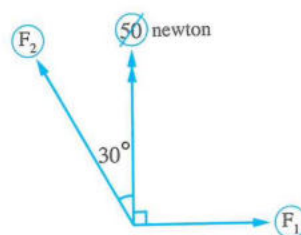
If the force of magnitude 50 newton
 is resolved into two components $\overrightarrow{F_1}$ and $\overrightarrow{F_2}$
 , then $F_1 + F_2 = \dots\dots\dots$ newton.

(a) 50

(b) 25

(c) $50\sqrt{2}$

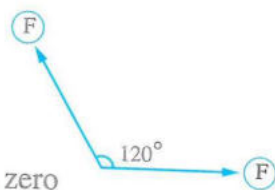
(d) $50\sqrt{3}$



(2) In the oppostie figure :

Magnitude of the resultant
of the two forces = newton.

- (a) $2 F$ (b) F (c) $\sqrt{3} F$ (d) zero



- (3) A right circular cone its base radius length is 6 cm. and the length of its drawer is 10 cm. , then its volume is cm^3 .

- (a) 32π (b) 64π (c) 96π (d) 288π

- (4) Two forces of magnitude $3 F$ and $2 F$ intersecting at a point and their resultant is $5 F$, then the measure of the angle between them is

- (a) zero° (b) 60° (c) 20° (d) 180°

- (5) If $\vec{F}_1 = \vec{i} - \vec{j}$, $\vec{F}_2 = 2\vec{i} - 4\vec{j}$, their resultant $\vec{R} = 2a\vec{i} - 3b\vec{j}$, then $a + b = \dots\dots\dots$

- (a) 3 (b) $3\frac{1}{3}$ (c) $3\frac{1}{6}$ (d) 12

- (6) The two skew lines are

- (a) not intersecting. (b) not parallel.
(c) not lie on one plane. (d) all the previous.

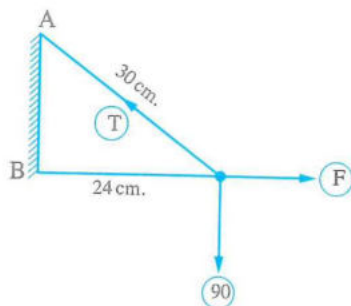
(7) In the opposite figure :

A body of weight 90 gm.wt. is attached to the end of a string
of 30 cm. long the body is pulled by a horizontal force.

It comes to equilibrium when it is 24 cm. apart from

wall $\overline{AB}$, then $T - F = \dots\dots\dots$ gm.wt.

- (a) 150 (b) 120
(c) 50 (d) 30



- (8) The equation of the circle whose centre (4 , 3) and touches X -axis is

- (a) $(X - 3)^2 + (y - 4)^2 = 16$ (b) $(X - 4)^2 + (y - 3)^2 = 9$
(c) $(X + 3)^2 + (y + 4)^2 = 9$ (d) $(X + 3)^2 + (y - 4)^2 = 16$

- (9) The diameter length of the circle : $4X^2 + 4y^2 + 16X - 8y - 16 = 0$, is length unit.

- (a) 3 (b) 6 (c) 12 (d) 24

- (10) A triangular pyramid of regular faces , length of its edge is 12 cm. , then its total surface area = cm^2

- (a) 144 (b) $144\sqrt{2}$ (c) $144\sqrt{3}$ (d) $144\sqrt{6}$

- (11) A body is placed on a rough inclined plane makes an angle of measure $\sin^{-1} \frac{5}{13}$

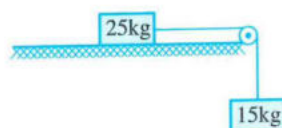
and it was about to slide under effect of its weight only , then the coefficient of static fricton between the body and the plane equals

- (a) $\frac{5}{13}$ (b) $\frac{5}{12}$ (c) $\frac{12}{13}$ (d) $\frac{12}{5}$

(12) In the opposite figure :

The pulley is smooth , the horizontal plane is rough , the system is about to move , then the coefficient of static friction =

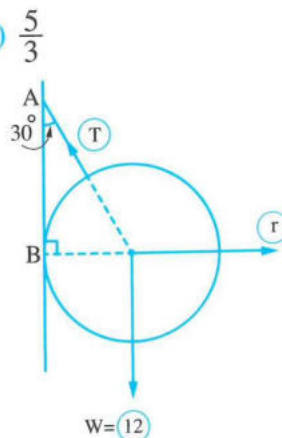
- (a) $\frac{3}{4}$ (b) $\frac{3}{5}$ (c) $\frac{4}{5}$ (d) $\frac{5}{3}$



(13) In the opposite figure :

If the sphere is in equilibrium , then $(T, r) = \dots\dots\dots$ newton.

- (a) (4 , 8) (b) (12 , 8)
(c) $(4\sqrt{3}, 8\sqrt{3})$ (d) $(8\sqrt{3}, 4\sqrt{3})$



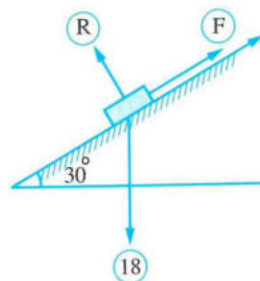
(14) The volume of the quadrilateral pyramid , where its base as rhombus of diagonals length 6 cm. , 5 cm. and its height 4 cm. equals cm^3

- (a) 40 (b) 25 (c) 30 (d) 20

(15) In the opposite figure :

A body of weight 18 newton is placed on a smooth plane inclined to the horizontal by an angle of measure 30° , it is kept in equilibrium by a force of magnitude F newton in the direction of the plane upward , then $F + R = \dots\dots\dots$ newton.

- (a) $6\sqrt{3}$ (b) $9\sqrt{3}$
(c) $18\sqrt{3}$ (d) $9 + 9\sqrt{3}$



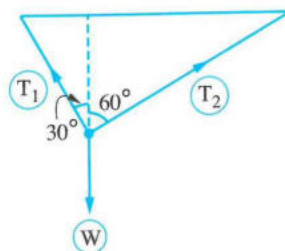
(16) The height of right circular cone is 6 cm. and the circumference of its base is 16π cm. , then its lateral area = cm^2

- (a) 144π (b) 64π (c) 60π (d) 80π

(17) In the opposite figure :

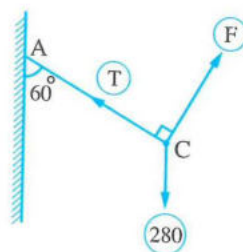
A body of weight 36 kg.wt. is suspended by two string incline to the vertical by angles of measures 30° , 60° , then : $T_1 + T_2 = \dots\dots\dots$ kg.wt.

- (a) 45 (b) $9 + 18\sqrt{3}$
(c) $36 + 18\sqrt{3}$ (d) $18(1 + \sqrt{3})$



(18) In the opposite figure :

A lamp of weight 280 gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T} = \dots\dots\dots$



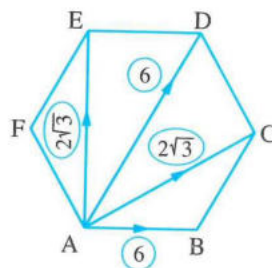
- (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

Third Essay questions

- (19) A regular quadrilateral pyramid the length of its base is 20 cm. , and its height is $10\sqrt{3}$ cm.
Find : (1) Its lateral surface area. (2) Its volume.

(20) In the opposite figure :

ABCDEF is a regular hexagon , forces of magnitudes 6 , $2\sqrt{3}$, 6 , $2\sqrt{3}$ newton. act along $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ and $\overrightarrow{AE}$ respectively Find their resultant.



5 Alexandria Governorate

**Al Agamy Zone
Mathematics Inspection**



First Multiple choice questions

1 mark for each question

- (1) Two forces of magnitudes 3 F , 2 F dyne its resultant of magnitude F dyne , then the angle between them = $\dots\dots\dots^\circ$
(a) zero (b) 180 (c) 90 (d) 120
- (2) The circle which its equation $(x - 5)^2 + (y + 2)^2 = 25$ touch $\dots\dots\dots$
(a) X-axis. (b) y-axis.
(c) the positive two coordinates axes. (d) the negative two coordinates axes.
- (3) A body of weigh “w” gm.wt. is placed on a rough plane inclined to horizontal by an angle of measure (θ) , the body is about to move downwards the plane under act of its weight only then the static coefficient friction (μ_s) between the body and the plane = $\dots\dots\dots$
(a) $\cot \theta$ (b) $\cot (90 - \theta)$ (c) $\sin \theta$ (d) $\cos \theta$
- (4) The ratio between the edge length of the triangular regular faces pyramid and its height is $\dots\dots\dots$
(a) $2\sqrt{2} : \sqrt{3}$ (b) $2\sqrt{2} : 3$ (c) $\sqrt{6} : 2$ (d) $\sqrt{6} : 3$
- (5) Which of the following magnitudes of two forces can't be its resultant magnitude equal 4
(a) 3 , 4 (b) 3 , 3 (c) 3 , 6 (d) 3 , 8

(6) In the opposite figure :

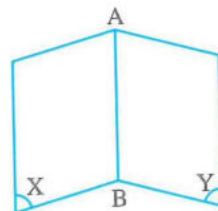
plane $X \cap$ plane $Y = \dots\dots\dots$

(a) $\{A, B\}$

(b) $\overline{AB}$

(c) $\overrightarrow{AB}$

(d) $\overleftrightarrow{AB}$



(7) The force which equilibrium with two perpendicular forces of magnitudes 12 , 16 kg.wt. equal $\dots\dots\dots$ kg.wt.

(a) 40

(b) 20

(c) 28

(d) 192

(8) A right circular cone its height 12 cm. , its drawer length 15 cm. , then its volume is $\dots\dots\dots$ cm^3

(a) 32π

(b) 180π

(c) 324π

(d) 715π

(9) Two forces of magnitudes 8 , F newton , the angle between them 120° the resultant perpendicular to the force of magnitude F , then F = $\dots\dots\dots$ newton.

(a) 2

(b) 4

(c) 6

(d) 16

(10) The circle which its equation : $(X + 2)^2 + y^2 + 2y = 0$ its radius is $\dots\dots\dots$ unit length

(a) 1

(b) 2

(c) 3

(d) 4

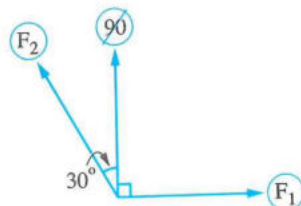
(11) A force 90 newton resolved into two components F_1, F_2 , then $F_2 = \dots\dots\dots$ newtons.

(a) $60\sqrt{3}$

(b) $45\sqrt{3}$

(c) 45

(d) 60



Second Multiple choice questions

2 marks for each question

(12) A right circular cone its base equation $(X - 2)^2 + (y + 3)^2 = 36$, its height 8 cm. , then its lateral surface area = $\dots\dots\dots$ $\pi \text{ cm}^2$

(a) 30

(b) 48

(c) 60

(d) 96

(13) In the opposite figure :

If the set of forces is in equilibrium , then $T + F = \dots\dots\dots$ gm.wt.

(a) 16

(b) 48

(c) 64

(d) 144

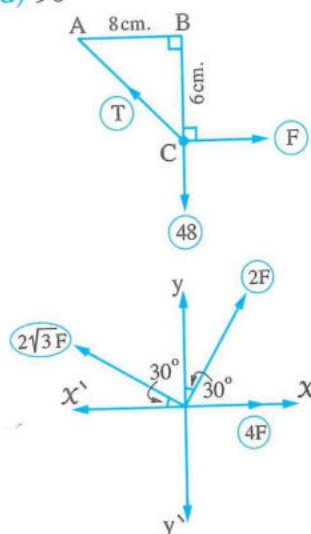
(14) The magnitude of the resultant of forces in the opposite figure = $\dots\dots\dots$ Force unit.

(a) 2 F

(b) $2\sqrt{3} F$

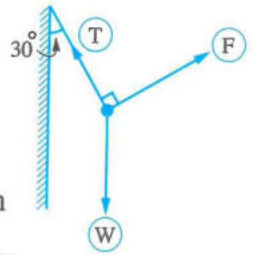
(c) 4 F

(d) $4\sqrt{3} F$



(15) In the opposite figure :

A body its weight W gm.wt. is attached to the end of a string its other end fixed at a vertical wall , the body is in equilibrium under effect of a perpendicular force of magnitude F to the string when the string inclined to vertical by angle 30° , then ratio $W : F = \dots\dots\dots$



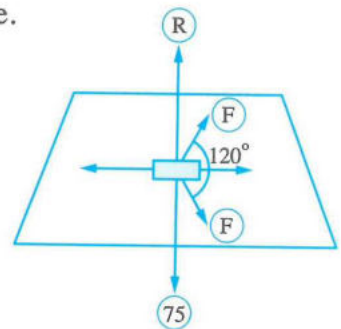
- (a) 1 : 2 (b) 2 : 1 (c) $1 : \sqrt{3}$ (d) $\sqrt{3} : 1$

(16) A quadrilateral regular pyramid its volume = 64 cm^3 , its height 6 cm. , then base perimeter = $\dots\dots\dots$ cm.

- (a) 8 (b) $8\sqrt{2}$ (c) 16 (d) $16\sqrt{2}$

(17) A body of weight 75 gm.wt. placed on a rough horizontal plane.

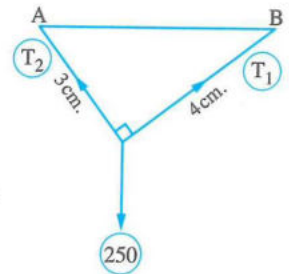
Two horizontal equal forces of magnitude F gm.wt act on it including between them an angle of measure 120° act on the body , the coefficient static friction between the body and plane = $\frac{1}{3}$, if the body is about to move , then $F = \dots\dots\dots$ gm.wt.



- (a) 20 (b) 25 (c) 50 (d) 75

(18) In the opposite figure :

A body weight 250 gm.wt. is in equilibrium by suspending it by two perpendicular strings of lengths 3 cm. , 4 cm. and the other end A , B are on horizontal line , then $T_1 + T_2 = \dots\dots\dots$ gm.wt.



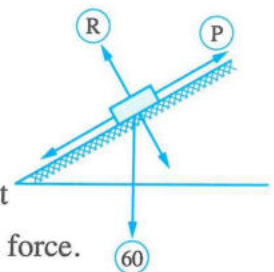
- (a) 50 (b) 150 (c) 250 (d) 350

Third Essay questions

(19) Find the general equation of circle which its centre m (2 , - 3) and pass through point A (- 2 , 0).

(20) A body of weight 60 kg.wt. is placed on a rough plane inclined to horizontal with an angle of measure 30° .

The body is pulled by a force parallel to the line of the greatest slope which make the body about to move upwards. If the coefficient of static friction between the body and the plane = $\frac{1}{\sqrt{3}}$, find the pull force.





First

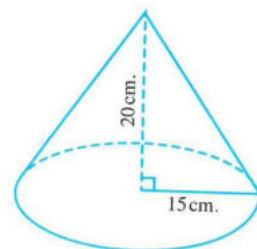
Multiple choice questions

1 mark for each question

- (1) If the resultant of the forces : $\vec{F}_1 = 2\hat{i} - 2\hat{j}$, $\vec{F}_2 = 4\hat{i} - 7\hat{j}$ is $\vec{R} = 2a\hat{i} - 3b\hat{j}$, then $a + b = \dots\dots\dots$
- (a) 3 (b) 6 (c) 7 (d) 9
- (2) Two forces of magnitude 16 , 16 newton and the measure of the angle between them is 120° , then the magnitude of their resultant is $\dots\dots\dots$
- (a) 8 (b) $8\sqrt{3}$ (c) 16 (d) $16\sqrt{3}$
- (3) Two forces of magnitudes 13 , 9 newton and a magnitude of their resultant is 4 newton , then the measure of the angle between them is $\dots\dots\dots$
- (a) zero (b) 120° (c) 150° (d) 180°
- (4) A body of weight 6 newton was placed on a smooth inclined plane inclined to the horizontal at an angle of measure 30° , then the magnitude of the component in direction of the plane = $\dots\dots\dots$ newton.
- (a) 6 (b) $6\sqrt{3}$ (c) 3 (d) $3\sqrt{3}$
- (5) A body with a weight (2 w) newton is placed on a rough horizontal plane and horizontal force of magnitude (w) newton acts on it , if the body was about to move , then the measure of the angle of friction is $\dots\dots\dots$
- (a) $\tan^{-1}(2)$ (b) $\tan^{-1}(2w)$ (c) $\tan^{-1}\left(\frac{1}{2}\right)$ (d) $\tan^{-1}\left(\frac{1}{2w}\right)$
- (6) Two forces of magnitudes 12 , 5 newton meet at a point , then the magnitude of their resultant is $\in \dots\dots\dots$
- (a) [7 , 3] (b) [7 , 17] (c) [13 , 17] (d) [0 , 17]
- (7) A right circular cone whose base radius = length of its height = 6 cm. , then its volume = $\dots\dots\dots \text{cm}^3$.
- (a) $72\sqrt{2}\pi$ (b) $36\sqrt{2}\pi$ (c) 72π (d) 216π
- (8) The circle whose equation : $3x^2 + 3y^2 = 27$ has a radius of $\dots\dots\dots$ length unit.
- (a) 3 (b) $3\sqrt{3}$ (c) 13.5 (d) 27
- (9) The circle that touches the coordinate axes of the points (5 , 0) , (0 , -5) , then its equation is $\dots\dots\dots$
- (a) $(x-5)^2 + (y+5)^2 = 50$ (b) $(x-5)^2 + (y+5)^2 = 10$
(c) $(x-5)^2 + (y+5)^2 = 25$ (d) $(x-5)^2 + (y+5)^2 = 5$

(10) In the opposite figure :

A right circular cone whose height is 20 cm.
and the radius of the base is 15 cm. , then its lateral
surface area is cm^2



- (a) 375π (b) 300π
(c) 1500π (d) 100π

(11) A regular quadrilateral pyramid with base side length 10 cm. its height is 12 cm. , then its
slant height is cm.

- (a) 5 (b) 6 (c) 13 (d) 17

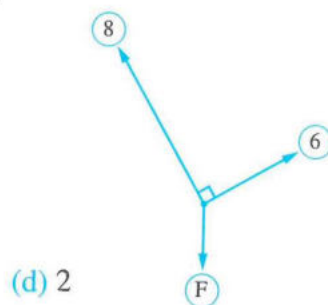
Second Multiple choice questions

2 marks for each question

(12) In the opposite figure :

Forces with magnitudes 8 , 6 , F newton
act in a body if the group is balanced
, then F = newton.

- (a) 14 (b) 8 (c) 10

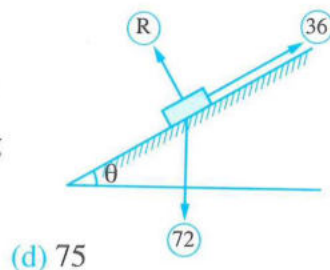


(d) 2

(13) In the opposite figure :

A body of weight 72 newton is placed on smooth inclined
plane with an angle of measure (θ) with a horizontal , the body
is kept in equilibrium by a force of magnitude 36 newton acting
in direction of a line of greatest slope , then $\theta = \dots\dots\dots^\circ$

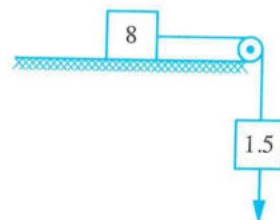
- (a) 60 (b) 45 (c) 30



(d) 75

(14) In the opposite figure :

A body of weight 8 newton is placed on rough horizontal
plane and tied to the end of a light string passes over
a small smooth pulley and the end is tied to another body
of weight 1.5 newton , the static friction coefficient is $\frac{1}{4}$
, then the body is equilibrium and

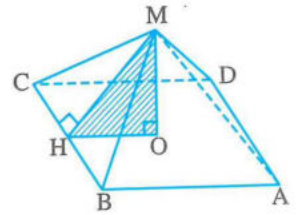


- (a) The magnitude of the friction force = 2 N and the body is about to move.
(b) The magnitude of the friction force = 2 N and the body isn't about to move.
(c) The magnitude of the friction force = 1.5 N and the body is about to move.
(d) The magnitude of the friction force = 1.5 N and the body isn't about to move.

(15) In the opposite figure :

MABCD is quadrilateral right pyramid , its base is a square ABCD , whose perimeter is 48 cm. , $MH = 10$ cm. , then its volume is cm^3

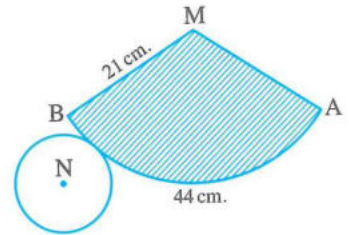
- (a) 1152 (b) 768
(c) 576 (d) 384



(16) In the opposite figure :

A right circular cone net where $MA = MB = 21$ cm. , the length of $\widehat{AB} = 44$ cm. , $\left(\pi = \frac{22}{7}\right)$, then the height of the cone is cm.

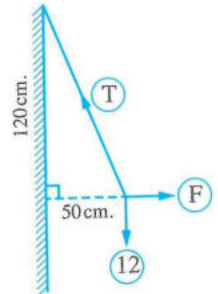
- (a) $14\sqrt{2}$ (b) 14
(c) $7\sqrt{2}$ (d) 7



(17) In the opposite figure :

A weight of 12 newton is suspended from one end of a string and the other end is fixed to a point on a vertical wall. If the body balances when it is pulled by a horizontal force that it away from the wall a distance of 50 cm. , then $T + F =$ newton.

- (a) 18 (b) 9 (c) 13 (d) 5



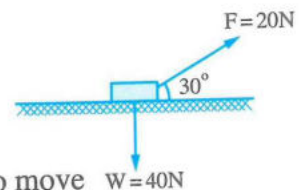
- (18)** If a body is placed on a rough inclined plane and the body is about to slide down the plane , when the plane is inclined to horizontal at an angle of measure 30° the coefficient of static friction is

- (a) $\frac{\sqrt{3}}{3}$ (b) $\sqrt{3}$ (c) $\frac{\sqrt{2}}{2}$ (d) $\sqrt{2}$

Third Essay questions

(19) In the opposite figure :

A body of weight 40 newton was placed on a rough horizontal plane , a force of magnitude 20 newton inclines to the horizontal an angle of measure 30° acted on it then the body become about to move , then Find the static friction force and the measure of the angle of friction.



- (20)** If $\widehat{AB}$ is a diameter of a circle M where $A = (6, -4)$, $B = (0, 2)$ **Find :**

- (1) The center of the circle and the length of the radius.
(2) The general form of the equation of the circle.



First

Multiple choice questions

1 mark for each question

- (1) A force of magnitude 100 gm.wt. acts in direction of 30° north of the west is resolved into two perpendicular components, then the magnitude of the component in direction north is gm.wt.
 (a) 50 (b) $50\sqrt{3}$ (c) 100 (d) $100\sqrt{3}$
- (2) Two forces of magnitudes 4, 8 kg.wt. act on a particle. If the measure of the angle between them is 120° , then the magnitude of their resultant is
 (a) $4\sqrt{3}$ (b) $8\sqrt{3}$ (c) 6 (d) $6\sqrt{3}$
- (3) Two forces act on a particle. If the maximum value of their resultant is 54 kg.wt. and the minimum value of their resultant 18 kg.wt. find the magnitude of greater force is
 (a) 36 (b) 18 (c) 54 (d) 72
- (4) Two forces act at a point their magnitudes are 7, F newton and their resultant bisects the angle between them, then $F = \dots\dots\dots$ newton.
 (a) 49 (b) 14 (c) 7 (d) $7\sqrt{2}$
- (5) Two forces of magnitudes 3, F newton act at a point include an angle of measure 120° and their resultant perpendicular to the first force, then $F = \dots\dots\dots$ N
 (a) 0 (b) $3\sqrt{3}$ (c) 1.5 (d) 6
- (6) A body of weight 6 newton is placed on a smooth inclined plane to horizontal at angle of measure 30° it is kept in equilibrium by a horizontal force, then the magnitude of the reaction of the plane = N.
 (a) $2\sqrt{3}$ (b) $3\sqrt{3}$ (c) $4\sqrt{3}$ (d) $8\sqrt{3}$
- (7) The point which lies on the circle : $(x - 3)^2 + (y - 4)^2 = 25$ is
 (a) (3, 4) (b) (3, 0) (c) (0, 4) (d) (0, 0)
- (8) A regular quadrilateral pyramid the perimeter of its base = 40 cm. and it height 12 cm., then lateral surface area = cm^2
 (a) 160 (b) 240 (c) 260 (d) 320
- (9) The lateral surface area of the right cone whose radius is 6 cm. and the height of the cone is 8 cm. = cm^2
 (a) 28π (b) 10π (c) 60π (d) 48π

- (10) The number of planes that could pass through three non-collinear points is
 (a) 1 (b) 2 (c) 3 (d) 4
- (11) A triangular pyramid of regular faces, its edge length 10 cm., then its total area equals cm^2
 (a) 40 (b) 100 (c) $100\sqrt{3}$ (d) $25\sqrt{3}$

Second

Multiple choice questions

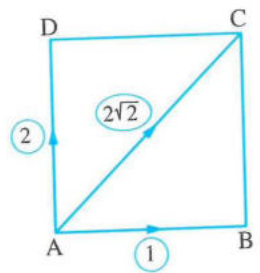
2 marks for each question

- (12) A body weight 40 kg.wt. is placed on a rough horizontal plane. Two perpendicular horizontal forces of magnitude 6, 8 kg.wt. affected the body in the same plane, making the body about to move, then the coefficient of static friction between the body and the plane
 (a) 4 (b) $\frac{1}{4}$ (c) $\frac{1}{3}$ (d) $\frac{2}{3}$
- (13) Six coplanar forces of magnitudes 5, 4, 7, 3, 6, 5 newton act on a particle, the measure of the angle between each two consecutive forces is 60° , then the magnitude of the resultant of these forces newton.
 (a) 0 (b) 3 (c) 4 (d) 5
- (14) If $\vec{F}_1 = 7\hat{i} - 4\hat{j}$, $\vec{F}_2 = k\hat{i} + 3\hat{j}$, $\vec{F}_3 = -9\hat{i} + m\hat{j}$ and R is their resultant and $\vec{R} = (5\sqrt{2}, \frac{\pi}{4})$, then $m + k =$
 (a) 13 (b) 5 (c) 7 (d) 6
- (15) A weight of 75 gm.wt. is suspended by two light strings of lengths 90 cm. and 120 cm. from two points on a horizontal line 150 cm. apart, then $T_1 + T_2 =$ gm.wt.
 (a) 105 (b) 210 (c) 200 (d) 195

(16) In the opposite figure :

ABCD is a square, then the magnitude of the resultant =

- (a) 5 (b) 10
 (c) 3 (d) $5\sqrt{2}$



- (17) If the equation : $2x^2 + ay^2 + bxy - 6 = 0$ represents a circle, then its area = square unit.

- (a) 6π (b) $\sqrt{6}\pi$ (c) 9π (d) 3π

(18) In the opposite figure :

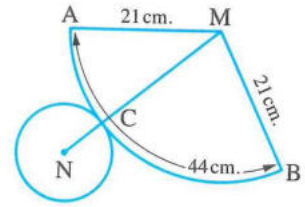
It shows a net of a right cone
, then its height = cm.

(a) 7

(b) $14\sqrt{2}$

(c) 14

(d) $7\sqrt{3}$



Third

Essay questions

- (19) A body of weight 40 Newtons was placed on a rough inclined plane inclined to the horizontal at an angle whose cosine is equal to $\frac{4}{5}$. If the least force acting in the direction of the line of the greatest slope of the plane upward to preserve the balance of the body is 16 newtons , find the measure of the angle of static friction between the body and the plane.
- (20) The radius length of the base of a right circular cone = 5 cm. and its total surface area = $90\pi \text{ cm}^2$, find its volume.

8

El-Sharkia Governorate

Mathematics Inspection



First

Multiple choice questions

1 mark for each question

- (1) A body of weight 6 N was placed on smooth inclined plane on the horizontal with angle 30° is resolved into two perpendicular components , then the magnitude of the component of weight on the direction of greatest slope of plane = N
- (a) 6 (b) 12 (c) 3 (d) $3\sqrt{3}$
- (2) Two perpendicular forces their magnitude 5 , F Newton and their resultant = 13 N , then F =
- (a) 8 (b) 12 (c) 14 (d) 10
- (3) Two forces of magnitude 5 , 3 N acts in a point and the measure of the angle between them 60° , then the magnitude of their resultant equal newton.
- (a) 7 (b) 6 (c) 5 (d) 3
- (4) If $\vec{F}_1 = 2\vec{i} + 5\vec{j}$, $\vec{F}_2 = 4\vec{i} + 3\vec{j}$, then their resultant magnitude = force unit.
- (a) 10 (b) 12 (c) 13 (d) 8
- (5) A body of weight 8 N was placed on horizontal rough plane , a horizontal force acted on the body by magnitude 6 N , then the body about to move , then the resultant reaction = N
- (a) 10 (b) 14 (c) 2 (d) 48

- (6) A body of weight 6 N was placed on a rough plane inclined on the horizontal with angle of measure 30° , then the body about to move, then the coefficient of static friction between the body and the plane =

(a) $\frac{1}{3}\sqrt{3}$ (b) $\sqrt{3}$ (c) $\frac{1}{3}$ (d) 3

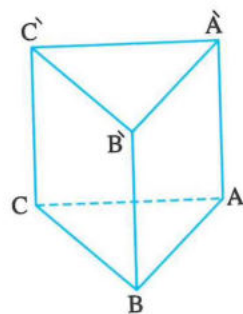
- (7) Which of the following does not determine the plane?

(a) Three points non collinear. (b) two skew straight lines.
(c) Two parallel straight lines. (d) Two intersection straight lines.

- (8) In the opposite figure:

$\overleftrightarrow{AA'}$, $\overleftrightarrow{BC}$ are

(a) parallel. (b) determine the plane.
(c) skew. (d) otherwise.



- (9) MABCD is regular quadratic pyramid the length of its base side = 10 cm. and its slant height = 13 cm., then its total area = cm^2

(a) 360 (b) 120 (c) 460 (d) 3

- (10) The number of planes which passes through one straight line is

(a) zero. (b) one. (c) two. (d) infinite number.

- (11) The radius length of the circle: $x^2 + y^2 - 12x + 4y - 9 = 0$ equal

(a) 3 (b) 9 (c) 7 (d) 49

Second Multiple choice questions

2 marks for each question

- (12) Two forces of magnitude F_1 , F_2 Newton and their resultant of magnitude R where $R \in [2, 8]$, then $F_1 \times F_2 =$

(a) 10 (b) 6 (c) 15 (d) 16

- (13) If $\vec{F}_1 = a\vec{i} - 5\vec{j}$, $\vec{F}_2 = 4\vec{i} + b\vec{j}$, $\vec{F}_3 = 4\vec{i} - 3\vec{j}$ are in equilibrium, then $a + b =$ force unit.

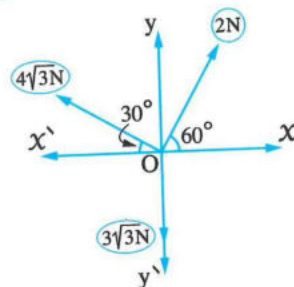
(a) 8 (b) 16 (c) zero (d) - 8

- (14) In the opposite figure:

If $\vec{R} = a\vec{i} + b\vec{j}$

, then $b =$

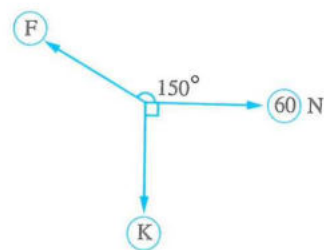
(a) - 4 (b) zero
(c) 3 (d) $\sqrt{3}$



(15) In the opposite figure :

If the forces are equilibrium
, then $F = \dots\dots\dots$ N

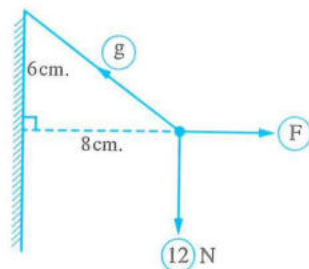
- (a) 60 (b) 120
(c) $20\sqrt{3}$ (d) $40\sqrt{3}$



(16) In the opposite figure :

If the forces of magnitudes 12 , g , F newton are in equilibrium
, then $g + F = \dots\dots\dots$ newton.

- (a) 10 (b) 14
(c) 20 (d) 36



(17) A right cone its base radius length = 5 cm. and its height 12 cm.
, then its lateral surface area = $\dots\dots\dots$ cm^2

- (a) 100π (b) 65π (c) 100 (d) 60π

(18) The equation of the circle its diameter is $\overline{AB}$ in which A (3 , - 2) , B (3 , 8) is $\dots\dots\dots$

- (a) $(x - 3)^2 + (y - 3)^2 = 25$ (b) $(x - 3)^2 + (y - 3)^2 = 100$
(c) $(x + 3)^2 + (y - 3)^2 = 25$ (d) $(x - 3)^2 + (y + 3)^2 = 100$

Third Essay questions

(19) A body of weight 18 N placed on inclined rough plane inclined on the horizontal with angle of measure 30° and the coefficient of static friction between the body and the plane $\frac{1}{\sqrt{3}}$ and

the force F acts on the body in the direction of the greatest slope to up hence the body about to move find the maximum value of the force.

(20) MABCD is regular quadratic pyramid the length of its base side 6 cm. and length of its lateral edge 5 cm. Find its volume.

9

El-Monofia Governorate

Berket Elsaba Educational Zone



First

Multiple choice questions

1 mark for each question

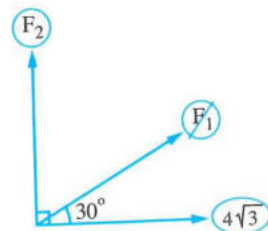
(1) Two forces equal in magnitudes act at particle and the magnitude of their resultant $42\sqrt{2}$ N and enclose angle between them 90° . Then the magnitude of each force is $\dots\dots\dots$

- (a) zero (b) 21 (c) $21\sqrt{2}$ (d) 42

(2) In the opposite figure :

If the force of magnitude F_1 N is resolved into the two perpendicular components , then $F_1 + F_2 = \dots\dots\dots$

- (a) 8 (b) 12
(c) $12\sqrt{3}$ (d) $16\sqrt{3}$



(3) If $\vec{F}_1 = 3\hat{i} + 2\hat{j}$, $\vec{F}_2 = a\hat{i} + b\hat{j}$ and $\vec{F}_3 = -2\hat{i} + 7\hat{j}$ and $\vec{R} = (6\sqrt{2}, \frac{3}{4}\pi)$

, then $(a, b) = \dots\dots\dots$

- (a) $(7, -3)$ (b) $(-7, 3)$ (c) $(7, 3)$ (d) $(-7, -3)$

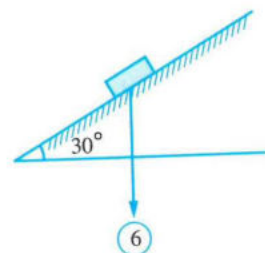
(4) The center of a circle its equation is : $2x^2 + 2y^2 - 12x + 8y = 0$ is $\dots\dots\dots$

- (a) $(-3, -2)$ (b) $(3, -2)$ (c) $(-3, 2)$ (d) $(6, -4)$

(5) In the opposite figure :

If the body is about to slide , then the force of limiting static friction = $\dots\dots\dots$

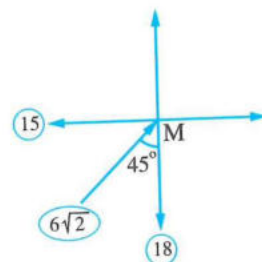
- (a) $\sqrt{3}$ (b) 3
(c) $3\sqrt{3}$ (d) 9



(6) In the opposite figure :

Three forces in a coordinated plane its magnitudes , 15 N , $6\sqrt{2}$ N , 18 N acting at point M , then the magnitude of its resultant = $\dots\dots\dots$ newton.

- (a) 512 (b) $\sqrt{61}$
(c) 30 (d) 15



(7) A regular triangular pyramid , the length of its base side 18 cm. , and its height $6\sqrt{6}$

Then the length of its slant height = $\dots\dots\dots$ cm.

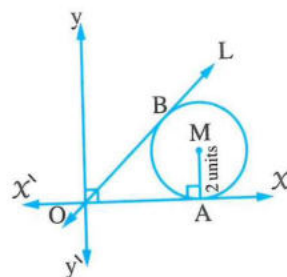
- (a) $16\sqrt{3}$ (b) $9\sqrt{3}$ (c) 16 (d) 24

(8) In the opposite figure :

If $OB = 4$ unit length

, then the equation of the circle M is $\dots\dots\dots$

- (a) $(x-2)^2 + (y-4)^2 = 4$
(b) $(x-2)^2 + (y-4)^2 = 16$
(c) $(x-4)^2 + (y-2)^2 = 4$
(d) $(x-4)^2 + (y-2)^2 = 16$



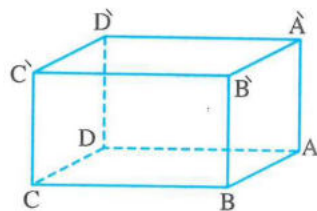
(9) A body its weight 48 N is placed of a horizontal rough plane , a horizontal force acted on it to make it about to move , then the magnitude of resultant reaction = 52 N then the coefficient of friction between the body and the plane = $\dots\dots\dots$

- (a) $\frac{12}{13}$ (b) $\frac{5}{13}$ (c) $\frac{5}{12}$ (d) $\frac{25}{144}$

(10) In the opposite figure :

The plane $A\hat{A}C \cap$ the Plane $ABCD = \dots\dots\dots$

- (a) $\overleftrightarrow{AB}$ (b) $\overleftrightarrow{AC}$
(c) $\overleftrightarrow{AD}$ (d) $\overleftrightarrow{BC}$



(11) The lateral area of a right circular cone its radius of its base 6 cm , its height 8 cm , is $\dots\dots\dots \pi \text{ cm}^2$

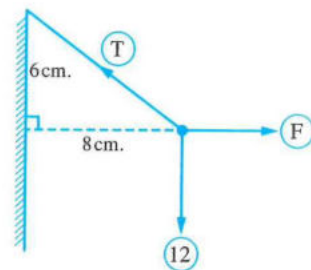
- (a) 48 (b) 60 (c) 156 (d) 240

Second Multiple choice questions 2 marks for each question

(12) In the opposite figure :

If the body is in equilibrium under the effect of the following forces then $T + F = \dots\dots\dots$

- (a) 14 (b) 18
(c) 36 (d) 48



(13) A weight W newton is placed on a plane inclined on the horizontal with an angle θ where $\tan \theta = \frac{4}{3}$ is resolved into two perpendicular components and the magnitude of the component of its weight in the direction of the plane is 12 N , then the weight $W = \dots\dots\dots$

- (a) 9 (b) 15 (c) 20 (d) 25

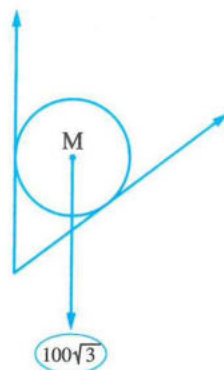
(14) 9 and 18 newton are magnitudes of two forces , act on a particle and their resultant is perpendicular to the first force then the measure of the angle between two forces $\dots\dots\dots^\circ$

- (a) 30 (b) 60 (c) 90 (d) 120

(15) In the opposite figure :

A regular sphere its weight $100\sqrt{3}$, supported on a smooth vertical wall and a smooth inclined plane with an angle with the horizontal 30° , then the reaction of the wall = $\dots\dots\dots \text{gm.wt.}$

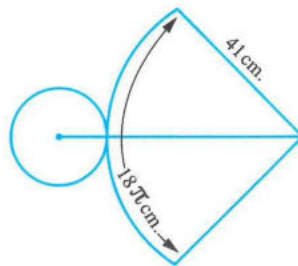
- (a) 50 (b) $30\sqrt{3}$
(c) $20\sqrt{3}$ (d) 100



(16) In the opposite figure :

The net of a right circular cone , then the height of the cone = $\dots\dots\dots \text{cm.}$

- (a) 7 (b) 36
(c) 40 (d) 41



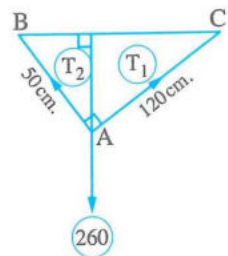
(17) In the opposite figure :

A body its weight 260 N

is in equilibrium under the effect of the shown

forces , then T_1 , T_2 are N

- (a) 240 , 120 (b) 300 , 120
(c) 150 , 120 (d) 100 , 240



(18) Which of the following polygons can be a base of a regular pyramid

- (a) Parallelogram (b) square (c) rectangle (d) triangle

Third

Essay questions

- (19) MABCD is a regular square pyramid the length of its side of the base 16 cm. and its height 6 cm. find its total area and its volume.
- (20) ABCD is a rectangle in which $AB = 8$ cm. , $BC = 6$ cm. , $E \in \overline{DC}$ where $ED = 6$ cm. a set of forces their magnitudes 6 , 20 , $13\sqrt{2}$ and 2 N act at the point A in the directions $\overrightarrow{AB}$, $\overrightarrow{CA}$, $\overrightarrow{AE}$ and $\overrightarrow{AD}$ Respectively , Find magnitude and direction of the resultant.

10

El-Gharbia Governorate

Maths Supervision



First

Multiple choice questions

1 mark for each question

- (1) The coefficient of friction between two bodies depends on of the bodies in contact.

- (a) the shape (b) the weight (c) the volume (d) the nature

(2) In the opposite figure :

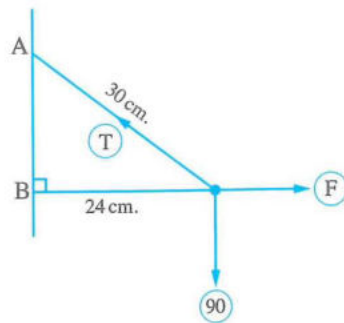
A body of weight 90 gm.wt. is attached to the end of a string of 30 cm. long.

The body is pulled by a horizontal force.

Then it becomes in equilibrium when it is 24 cm.

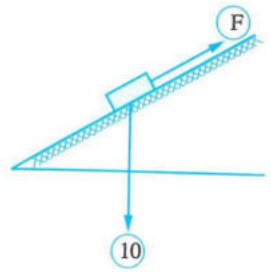
apart from the wall $\overline{AB}$, then $T - F = \dots\dots\dots$ gm.wt.

- (a) 50 (b) 30 (c) 120 (d) 150



- (3) A body of weight (w) kg.wt. is placed on a rough horizontal plane and the coefficient of static friction between the body and the plane = $\frac{2}{5}$. If a horizontal force of magnitude 45 kg.wt. acts on the body and make it about to move, then the weight of the body = kg.wt.
- (a) 22.5 (b) 90 (c) 112.5 (d) 225

- (4) A body of weight 10 newton is placed on a rough plane inclined to the horizontal by an angle whose sine is $\frac{3}{5}$, the coefficient of the static friction between the body and the plane equals $\frac{1}{4}$, a force of magnitude F newton acts on the body in the direction of the line of the greatest slope upward to make it about to move upward, then $F = \dots\dots\dots$ newton.



- (a) 8 (b) 10 (c) 6 (d) 4
- (5) Two forces act at a point, the magnitude of the two forces $8\sqrt{3}$, 8 newton and the measure of the included angle between them 150° , then the magnitude of their resultant = $\dots\dots\dots$ newton.
- (a) 64 (b) 32 (c) 16 (d) 8
- (6) Two forces of magnitudes 3, F newton and the measure of the angle between them is 120° . If their resultant is perpendicular to the first force, so the value of F in newton is $\dots\dots\dots$
- (a) 1.5 (b) 3 (c) 3.3 (d) 6
- (7) A force of magnitude $4\sqrt{2}$ newton acts in direction of East. It is resolved into two perpendicular components, so its component in the direction of Northern East of magnitude $\dots\dots\dots$ newton.
- (a) zero (b) 4 (c) $4\sqrt{2}$ (d) 6
- (8) If $\vec{F}_1 = 3\hat{i} + 2\hat{j}$, $\vec{F}_2 = a\hat{i} + 7\hat{j}$, $\vec{F}_3 = -12\hat{i} + b\hat{j}$ are three coplanar forces meeting at a point and the resultant $\vec{R} = (6\sqrt{2}, \frac{3}{4}\pi)$, Then $a - b = \dots\dots\dots$
- (a) zero (b) -3 (c) 3 (d) 6
- (9) Three equal forces in magnitude meeting at a point and they are in equilibrium then the measure of the angle between each two forces = $\dots\dots\dots$
- (a) 60° (b) 90° (c) 120° (d) 150°
- (10) If the radius length of the base of a right circular cone = 6 cm., and its height = 8 cm., then its lateral surface area = $\dots\dots\dots$ cm^2
- (a) 60π (b) 48π (c) 69π (d) 96π
- (11) A regular quadrilateral pyramid whose base perimeter is 36 and its height 10 cm., then its volume = $\dots\dots\dots$ cm^3
- (a) 180 (b) 270 (c) 360 (d) 810

Second**Multiple choice questions**

2 marks for each question

- (12) The length of diameter of the circle whose equation is :

$4x^2 + 4y^2 + 16x - 8y - 16 = 0$ equals length unit.

(a) 3 (b) 6 (c) 12 (d) 24

- (13) A triangular regular faces pyramid, its edge length 10 cm. , then its total area equal cm^2 .

(a) 40 (b) 100 (c) $100\sqrt{3}$ (d) $25\sqrt{3}$

- (14) Which of the following points does lie on the circle whose equation :

$$(x-2)^2 + y^2 = 13$$

(a) (2, 3) (b) (3, -2) (c) (2, 5) (d) (4, 3)

- (15) A piece of chocolate in the form of a right cone. Its volume is $27\pi \text{ cm}^3$, the circumference of its base $6\pi \text{ cm}$. then the length of its height = cm.

(a) 7 (b) 5 (c) 9 (d) 6

- (16) The two straight lines are skew , if they are :

(a) not parallel.

(b) not coincident.

(c) not located in the same plane.

(d) Located in the same plane.

- (17) Three coplanar forces meeting at a point , their magnitudes are 40 , 30 , 40 newton the first is in direction 60° West of North , the second is towards West and the third in the direction 30° North of East , then the magnitude of their resultant equal newton.

(a) 30 (b) 50 (c) 110 (d) 60

- (18) In the opposite figure :

The forces are in equilibrium

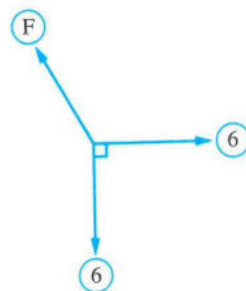
, then $F = \dots\dots\dots$ newton.

(a) 6

(b) 12

(c) $6\sqrt{2}$

(d) $5\sqrt{2}$

**Third****Essay questions**

- (19) A rod of length 50 cm and weight 20 newton was suspended from its terminals with two strings such that the two other ends are fixed in one point. If the length of the two strings are 30 cm , 40 cm respectively. Find the magnitude of the tension in each of the two strings.

- (20) A regular quadrilateral pyramid, the side length of its base is 18 cm. if its volume is 1296 cm^3 . Find the slant height and lateral surface area.



First

Multiple choice questions

1 mark for each question

- (1) A boy pushes a stone of weight 56 newton by a horizontal force of magnitude 42 newton , the stone was about to move , then the coefficient of static friction between the stone and the ridge equals

(a) 0.75 (b) 0.5 (c) 0.25 (d) 1

- (2) A body of weight 27 kg.wt. is placed on a horizontal rough plane , given that the coefficient of static friction between the body and the plane is $\frac{1}{3}$, find the magnitude of the force parallel to the plane which makes the body about to begin motion

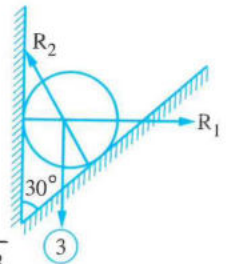
(a) 9 (b) 7 (c) 8 (d) 6

- (3) A body of weight 6 N was placed on a rough inclined plane it was about to slide if the limiting friction was $3\sqrt{3}$ N , then the measure of the inclination angle of the plane to the horizontal equals°

(a) 45 (b) 60 (c) 30 (d) 90

- (4) The opposite figure represents a smooth metal sphere of weight 3 Newton at rest (stable) between a smooth vertical wall and a smooth plane inclined to the vertical wall with angle of measure 30° . the pressure on the vertical wall = Newton.

(a) $6\sqrt{3}$ (b) 3 (c) 6 (d) $3\sqrt{3}$



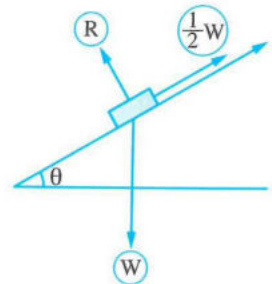
- (5) A ball of pendulum of weight 600 dyne is in equilibrium when the string makes an angle of measure 30° with the vertical under the effect of a force perpendicular to the string , then the magnitude of the force = dyne.

(a) 300 (b) $300\sqrt{3}$ (c) $300\sqrt{2}$ (d) 1200

- (6) In the opposite figure :

If the body is in equilibrium under acting forces , then $m(\angle \theta) = \dots\dots\dots^\circ$

(a) 60 (b) 15
(c) 30 (d) 45



- (7) Two forces , its magnitude are $8\sqrt{3}$ and 8 newton act at a point , the angle between them of measure 150° , then the magnitude of the resultant of the two forces = newton.

(a) 64 (b) 32 (c) 16 (d) 8

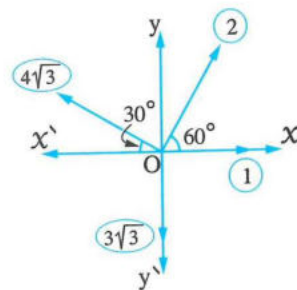
- (8) Two forces of magnitudes F , F act at a particle and the magnitude of their resultant is F , then the measure of the included angle of the two forces =°
 (a) 45 (b) 120 (c) 60 (d) 135
- (9) Three coplanar forces intersecting at one point and in equilibrium. If 3 and 7 N. are magnitudes of two forces of them, then the magnitude of the third force could be equals N.
 (a) 3 (b) 11 (c) 5 (d) 2

(10) In the opposite figure :

If the resultant is $\vec{R} = a\hat{i} + b\hat{j}$

, then $b = \dots\dots\dots$

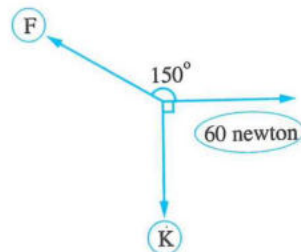
- (a) zero (b) 4
 (c) -4 (d) 3



(11) In the opposite figure :

If the forces in equilibrium, Then $F = \dots\dots\dots$ Newton.

- (a) $40\sqrt{3}$ (b) 120
 (c) $120\sqrt{3}$ (d) 60



Second

Multiple choice questions

2 marks for each question

- (12) The volume of the right cone is $27\pi \text{ cm}^3$ and the circumference of its base is $6\pi \text{ cm}$, then its height is cm.
 (a) 27 (b) 18 (c) 6 (d) 9
- (13) Right circular cone, area of its base = $25\pi \text{ cm}^2$. Length of its slant height = 13 cm. then its lateral area = cm^2 .
 (a) 100π (b) 50π (c) 65π (d) 90π
- (14) A regular quadrilateral pyramid, the length of the side of its base is 18 cm. and its volume is 1296 cm^3 , then its slant height and its lateral surface area =
 (a) 18, 450 (b) 15, 540 (c) 14, 520 (d) 16, 560
- (15) The equation of the circle whose diameter $\overline{AB}$ where $A(2, -7)$, $B(6, 5)$ is
 (a) $(x-4)^2 + (y+1)^2 = 40$ (b) $(x-4)^2 + (y-1)^2 = 50$
 (c) $(x-4)^2 + (y+1)^2 = 50$ (d) $x^2 + (y+1)^2 = 40$
- (16) MABCD is a regular quadrilateral pyramid. The length of its base side ABCD equals 10 cm. and its height equals 12 cm. then its slant height is
 (a) 13 (b) 15 (c) 11 (d) 16

(17) The two planes are coincident if they have in common.

- (a) Three collinear points (b) Two points
(c) Three non-collinear points (d) Only one point

(18) If A , B and C are three points determine a plane , then

- (a) $AB = BC = AC$ (b) $AB + BC = AC$
(c) $AB + BC > AC$ (d) $AB + BC < AC$

Third Essay questions

(19) A body of weight 20 kg.wt is placed on a rough horizontal plane. A horizontal force of magnitude 5 kg.wt. acted on the body, then the body became about to move , find the coefficient of static friction between the body and the plane.

(20) Find the general form of the equation of the circle whose center is (3 , - 4) and its radius length is 6 length units.

12 Ismailia Governorate

Maths Inspection



First Multiple choice questions

1 mark for each question

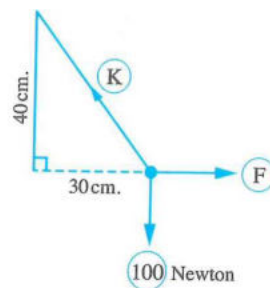
(1) A weight 200 newtons is placed on a rough plane inclined to the horizontal at an angle of 30° is resolved into two perpendicular components , then the magnitude of the components of the weight in the dircetion of the line of greatest slope = newton.

- (a) 100 (b) $100\sqrt{3}$ (c) 50 (d) $100\sqrt{2}$

(2) In the opposite figure :

F = Newtons.

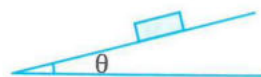
- (a) 40 (b) 75
(c) 100 (d) 125



(3) In the opposite figure :

$\mu_s = 0.25$ body is about to move downwards , then $\theta = \dots\dots\dots^\circ$

- (a) 14.04 (b) 14.48 (c) 75.52 (d) 75.87



(4) A right circular cone , the radius of its base 3 cm and the length of its drawer is 5 cm , it's volume = cm^3 .

- (a) 12π (b) 15π (c) 24π (d) 36π

(5) The circumference of the circle whose equation is : $x^2 + y^2 = 9$ is length units.

- (a) 3π (b) 6π (c) 9π (d) 18π

(6) Two straight lines are skew if they are

- (a) not parallel. (b) not coincident.
(c) not located in the same plane. (d) located in the same plane.

(7) A regular square pyramid with a base side length of 16 cm and a height of 6 cm. Its lateral height is cm.

- (a) 6 (b) 8 (c) 16 (d) 10

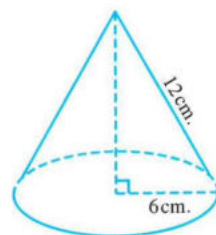
(8) A force of magnitude 8 Newtons acting in the direction of the north is resolved into two perpendicular components. Its component in the direction of the east = Newton.

- (a) 0 (b) 3 (c) $3\sqrt{2}$ (d) 8

(9) In the opposite figure :

The lateral area of the right cone shown =

- (a) 12π (b) 36π
(c) 72π (d) 144π



(10) If the magnitude of two forces are 8 Newtons , 15 Newtons and the measure of the angle between them is 90° , then the magnitude of their resultant = Newtons.

- (a) 7 (b) 15 (c) 17 (d) 8

(11) If $F_1 = 4i - 2j$, $F_2 = ai - 3j$, $F_3 = 3i - bj$, $R = 6i - 6j$, then : (a , b) =

- (a) (1 , 1) (b) (-1 , 1) (c) (-1 , -1) (d) (1 , -1)

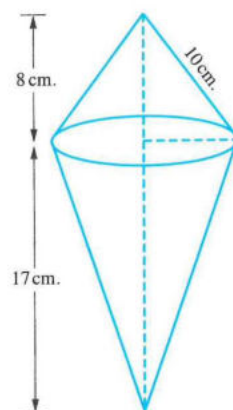
Second Multiple choice questions

2 marks for each question

(12) In the opposite figure :

If the height of the smaller cone = 8 cm and the length of it's drawer = 10 cm. and the height of the larger cone is equal to 17 cm. , then the volume of the two cones = cm^3 .

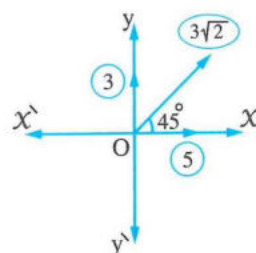
- (a) 45π (b) 50π
(c) 100π (d) 300π



(13) In the opposite figure :

The magnitude of the resultant of the forces shown =

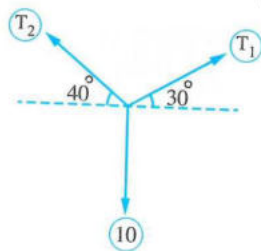
- (a) $8\sqrt{2}$ (b) 8
(c) 10 (d) $10\sqrt{2}$



(14) In the opposite figure :

A weight of 10 Newtons is suspended by two strings , the first of which is inclined to the horizontal at an angle of 30° and the other is inclined to the horizontal at an angle of 40°

, then $T_1 \simeq$ newtons.



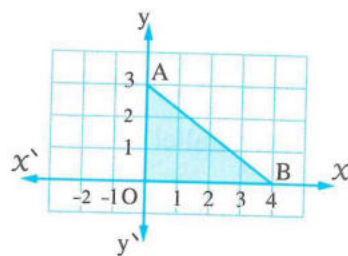
- (a) 7 (b) 8 (c) 9 (d) 10

(15) A body of weight 60 kg.wt. , If the coefficient of the static friction between the body and a horizontal plane is 0.5 , then the magnitude of the horizontal force that makes the body about to move = kg.wt.

- (a) 50 (b) 60 (c) 40 (d) 30

(16) The total surface area of the solid generated when revolving triangle ABO one complete revolution a round the X-axis = area units.

- (a) 12π (b) 24π
(c) 30π (d) 36π



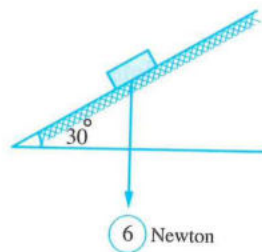
(17) A boy pushes a stone of weight 56 Newtons with a horizontal force of 42 Newtons on a sidewalk. The stone was about to move. The coefficient of static friction between the stone and the sidewalk =

- (a) $\frac{3}{4}$ (b) $\frac{2}{3}$ (c) $\frac{4}{3}$ (d) $\frac{7}{8}$

(18) In the opposite figure :

If the body was about to move , then the force of the limited static friction =

- (a) 3 (b) $2\sqrt{3}$
(c) $3\sqrt{2}$ (d) 9



Third Essay questions

(19) A body of weight 18 gm.wt. is placed on a rough horizontal plane , A horizontal force of magnitude F acts on it to make it about to move. If the angle between the resultant reaction force and the limited static friction force is θ where $\cos \theta = \frac{4}{5}$ Find the magnitude of the resultant reaction force.

(20) Find the equation of a circle of diameter $\overline{AB}$ where A (3 , 2) and B (3 , 10).



First

Multiple choice questions

1 mark for each question

- (1) Two forces of magnitudes $2F$, $3F$ acting at a point and the magnitude of their resultant is F , then the measure of the angle between them is°

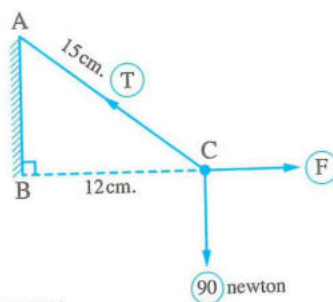
(a) 0 (b) 60 (c) 120 (d) 180

- (2) In the opposite figure :

A body of weight 90 newton and in equilibrium

Then $T - F = \dots\dots\dots$ newton

(a) 30 (b) 50
(c) 120 (d) 150



- (3) If $\overleftrightarrow{XY} \subset \text{plane } M$, $\overleftrightarrow{LZ} \parallel \text{plane } M$, then $\overleftrightarrow{XY}$ and $\overleftrightarrow{LZ}$ are

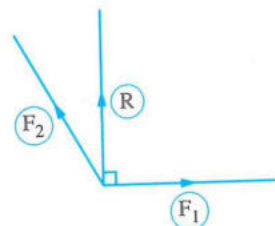
(a) parallel only. (b) skew only. (c) parallel or skew. (d) intersecting.

- (4) Two forces of magnitudes $(2F - 1)$, $(F + 3)$ newton acting at a point and their resultant bisects the angle between them, then $F = \dots\dots\dots$ newton.

(a) 3 (b) 4 (c) 5 (d) 6

- (5) By using the opposite figure

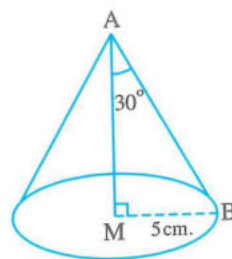
(a) $F_1 > F_2$ (b) $F_1 = F_2$
(c) $F_1 < F_2$ (d) $F_1 \geq F_2$



- (6) In the opposite figure :

The lateral area of a right circular cone = cm^2 .

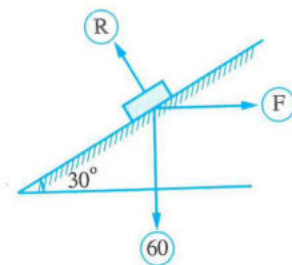
(a) 25π (b) 50π
(c) 75π (d) 100π



- (7) In the opposite figure :

A body of weight 60 gm.wt. is placed on a smooth plane inclined at an angle of measure 30° to the horizontal and is kept in equilibrium by a horizontal force of magnitude F newton, then $\frac{F}{R} = \dots\dots\dots$

(a) $\frac{1}{2}$ (b) $\sqrt{3}$
(c) $\frac{\sqrt{3}}{2}$ (d) 2



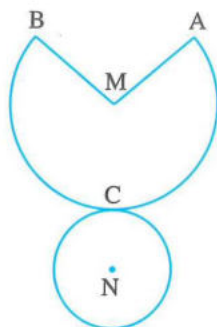
- (8) F_1, F_2 gm.wt. are magnitudes of two forces intersect at a point where $F_1 > F_2$ and the ratio between the maximum value and the minimum value of their resultant is 4 : 1, then $\frac{F_1}{F_2} = \dots\dots\dots$
- (a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $\frac{1}{2}$ (d) 2
- (9) The circumference of the circle whose equation : $(X-3)^2 + y^2 + 4y = 45$ Equals $\dots\dots\dots$
- (a) 7π (b) 14π (c) 21π (d) 28π
- (10) Two planes are coincident if they sharing $\dots\dots\dots$
- (a) one point (b) three collinear points
(c) two points (d) three non collinear points
- (11) The magnitudes of 3 coplanar forces intersect at one point are 5 , 12 , 9 newton the three forces acting at a point such that measure of the angle between the second and third forces equals 90° , then the maximum value of their resultant equals $\dots\dots\dots$ newton.
- (a) 26 (b) 22 (c) 20 (d) 18

Second

Multiple choice questions

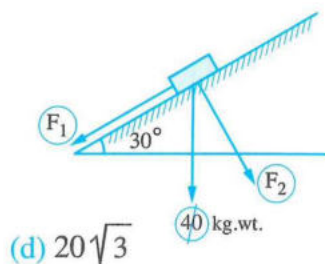
2 marks for each question

- (12) The perimeter of the base in a regular quadrilateral pyramid is 40 cm. and its height is 12 cm, then its lateral area = $\dots\dots\dots$ cm^2 .
- (a) 200 (b) 240 (c) 260 (d) 320
- (13) A body of weight $\sqrt{57}$ kg.wt is placed on a horizontal rough plane , two forces act on the body of magnitudes 2 , 3 kg.wt and include an angle of measure 60° where the two horizontal forces are on the same horizontal plane. If the body is about to move , then the angle of friction = $\dots\dots\dots^\circ$
- (a) 30 (b) 60 (c) 45 (d) 90
- (14) The opposite figure represents a right cone net form
A circular sector whose area is $20\pi \text{ cm}^2$,
The length of its arc $\widehat{ACB} = 8\pi \text{ cm}$.
Then the height of the solid = $\dots\dots\dots$ cm.
- (a) 2 (b) 3
(c) 5 (d) 4



(15) In the opposite figure :

A body of weight 40 kg.wt. is placed on an inclined plane makes an angle of measure 30° to the horizontal , then the magnitude of the component perpendicular to the plane $F_2 = \dots\dots\dots$ kg.wt.



- (a) 40 (b) 30 (c) $40\sqrt{3}$ (d) $20\sqrt{3}$

- (16) The equation : $x^2 + (h - 2)y^2 + (m + 3)xy = 25$ represents a circle if $(h, m) = \dots\dots\dots$
 (a) $(-3, 3)$ (b) $(3, -3)$ (c) $(3, 3)$ (d) $(-3, -3)$
- (17) A body of weight 400 gm.wt is placed on a plane inclined by 30° to the horizontal and the coefficient of friction between it and the body equal $\frac{\sqrt{3}}{4}$. A force of magnitude 50 gm.wt acts on it in the direction of the line of the greatest slope upwards. If the body is in equilibrium, then the friction force = $\dots\dots\dots$ gm.wt.
 (a) 200 (b) 400 (c) 150 (d) $200\sqrt{3}$
- (18) If the static friction coefficient between a mass of magnitude 40 kg and the ground surface equal 0.45, then the magnitude of the horizontal force which act on the mass and makes it about to move equal $\dots\dots\dots$ kg.wt.
 (a) 40 (b) 20 (c) 18 (d) 45

Third

Essay questions

- (19) ABCD is a square of side length 12 cm. $H \in \overline{BC}$ where $BH = 5$ cm. forces of magnitudes 2, 13, $4\sqrt{2}$, 9 gm.wt. act in directions of $\overrightarrow{AB}$, $\overrightarrow{AH}$, $\overrightarrow{CA}$ and $\overrightarrow{AD}$ respectively. Find the resultant of these forces.
- (20) Find the equation of the circle whose center is $(1, 2)$ and touches the straight line : $3x + 4y + 9 = 0$

14

El-Menia Governorate

Maths Inspection



First

Multiple choice questions

1 mark for each question

- (1) The resultant reaction is the resultant of $\dots\dots\dots$ when the body is about to move.
 (a) the weight of the body and the normal reaction
 (b) the weight of the body and the limiting static friction
 (c) the normal reaction and the limiting static friction
 (d) the kinetic friction and the normal reaction
- (2) A force of magnitude $4\sqrt{2}$ N acting in the east direction resolved into two perpendicular components then the magnitude of its component in the direction of north east = $\dots\dots\dots$ N.
 (a) zero (b) $4\sqrt{2}$ (c) 4 (d) 6
- (3) Wael pushes a box of books to his car on a rough horizontal plane, the Weight of the box and the books is 80 N, and the coefficient of static Friction between the box and the plane is 0.25, then the horizontal force that Wael can use to make the box about to move equals $\dots\dots\dots$ N.
 (a) 20 (b) 60 (c) 80 (d) 320

(4) In the opposite figure :

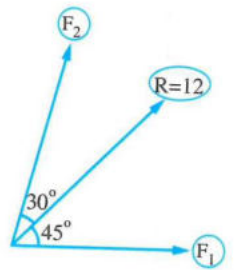
$R = 12$ newton then $F_1 = \dots\dots\dots$ newton.

(a) $12 \cos 75^\circ$

(b) $12 \cos 45^\circ$

(c) $6 \cos 45^\circ$

(d) $6 \operatorname{cosec} 75^\circ$



(5) If $\vec{F}_1 = 3\vec{i} - 2\vec{j}$, $\vec{F}_2 = 4\vec{i} - b\vec{j}$, $\vec{F}_3 = a\vec{i} - 4\vec{j}$, and the resultant $\vec{R} = 6\vec{i} - 4\vec{j}$ then $(a + b) = \dots\dots\dots$

(a) zero

(b) -3

(c) 1

(d) 2

(6) Which of the following set of Forces not equilibrium ?

(a) 7 newton , 8 newton , 11 newton

(b) 9 newton , 3 newton , 15 newton

(c) 12 newton , 12 newton , 6 newton

(d) 4 newton , 6 newton , 8 newton

(7) Number of planes that passing through three non-collinear points = $\dots\dots\dots$

(a) 1

(b) 2

(c) 3

(d) infinite number

(8) The vertical straight lines in the space are $\dots\dots\dots$

(a) parallel

(b) skew

(c) intersecting

(d) lie in one plane

(9) The area of a circle in which its equation $x^2 + y^2 = 8$, is $\dots\dots\dots$ unit area.

(a) $\sqrt{2} \pi$

(b) $2\sqrt{2} \pi$

(c) 8π

(d) 64π

(10) The ratio between the edge length of triangular pyramid of regular faces and its height = $\dots\dots\dots$

(a) $\sqrt{2} : \sqrt{3}$

(b) $\sqrt{3} : 2$

(c) $\sqrt{6} : 2$

(d) $\sqrt{3} : 3$

(11) The center of the circle $x^2 + y^2 - 6x + 8y = 0$, is point $\dots\dots\dots$

(a) $(3, -4)$

(b) $(4, -3)$

(c) $(-3, 4)$

(d) $(-4, 3)$

Second Multiple choice questions

2 marks for each question

(12) If $\vec{F} = 3\vec{i} - 4\vec{j}$, then $\|\vec{F}\| = \dots\dots\dots$ unit force.

(a) 3

(b) -4

(c) 5

(d) 1

(13) Three coplanar forces of magnitudes 5 , 6 , 7 newton act at a particle if the forces are in equilibrium then the cosine of the angle between the second and the third force = $\dots\dots\dots$

(a) $\frac{7}{5}$

(b) $-\frac{5}{7}$

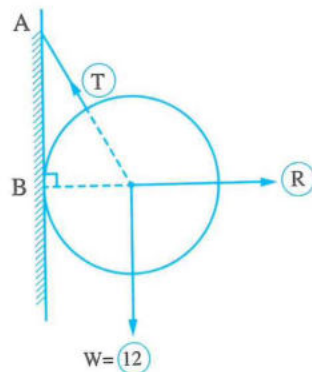
(c) $\frac{15}{17}$

(d) $\frac{1}{7}$

(14) In the opposite figure :

A metallic sphere is in equilibrium which its weight 12 newton and its radius 6 cm. is suspended by string of length 6 cm. and the other end A on vertically wall , then $R = \dots\dots\dots$

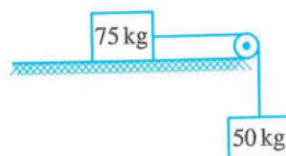
- (a) 4 (b) $4\sqrt{3}$
(c) 12 (d) $12\sqrt{3}$



(15) In the opposite figure :

The pulley is smooth and the horizontal plane is rough , the system is about to move , then the coefficient of static friction = $\dots\dots\dots$

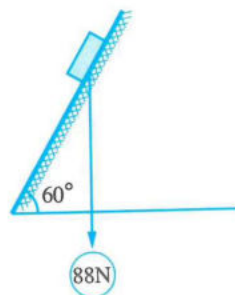
- (a) $\frac{1}{2}$ (b) $\frac{2}{3}$ (c) $\frac{1}{3}$ (d) $\frac{2}{5}$



(16) In the opposite figure :

A body of weight 88 newton placed on a rough inclined plane makes with the horizontal an angle of measure 60° , if the body about to slide then the magnitude of the limiting static friction = $\dots\dots\dots$ newton.

- (a) $22\sqrt{3}$ (b) $44\sqrt{3}$ (c) 22 (d) 44



(17) Lateral surface area of a right circular cone its height 8 cm. , and its radius length = 6 cm is $\dots\dots\dots \text{cm}^2$

- (a) 8π (b) 10π (c) 14π (d) 60π

(18) A regular quadrilateral pyramid its volume 64 cm^3 , and its height = 6 cm. then its base perimeter = $\dots\dots\dots \text{cm}$.

- (a) 8 (b) $8\sqrt{2}$ (c) 16 (d) $16\sqrt{2}$

Third Essay questions

(19) A weight of 200 gm.wt is suspended by two strings of lengths 90 cm and 120 cm. , other ends of the strings fixed in two horizontal points , the distance between them is 150 cm. Find the tension in each of the two strings in case of equilibrium.

(20) Find the general form of the equation of a circle whose center is $(-2, 3)$, and its radius length is 5 length units.



First

Multiple choice questions

1 mark for each question

- (1) Two forces of magnitudes 9 , 18 newton act at a point. Their resultant is perpendicular to the first force then the measure of the included angle between the two forces = °

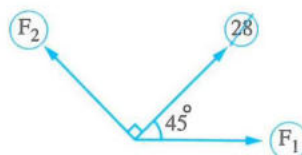
(a) 30 (b) 60 (c) 120 (d) 150

- (2) In the opposite figure :

If the force of magnitude 28 newton is resolved into two components $\vec{F}_1$, $\vec{F}_2$ as in the figure , then

F_1 = newton.

(a) 28 (b) $28\sqrt{2}$ (c) $20\sqrt{2}$ (d) $8\sqrt{2}$



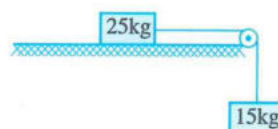
- (3) Number of planes that are passing through three non-collinear points is

(a) zero (b) 1 (c) 3 (d) an infinite number

- (4) In the opposite figure :

The pulley is smooth , the horizontal plane is rough , the system is about to move , then the coefficient of static friction =

(a) $\frac{3}{5}$ (b) $\frac{3}{4}$ (c) $\frac{4}{5}$ (d) $\frac{5}{3}$



- (5) A body is placed on a rough inclined plane it makes an angle of measure 60° to the horizontal and it was about to slide , then the coefficient of friction between the body and the plane =

(a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{2}$

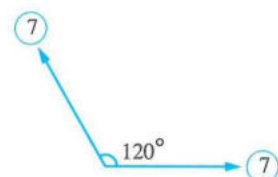
- (6) The equation of the circle whose centre (4 , 3) and touches X-axis is

(a) $(X-3)^2 + (y-4)^2 = 16$ (b) $(X-4)^2 + (y-3)^2 = 9$
 (c) $(X+3)^2 + (y+4)^2 = 9$ (d) $(X+3)^2 + (y-4)^2 = 16$

- (7) In the opposite figure :

The magnitude of the resultant of two forces = newton.

(a) 7 (b) $7\sqrt{3}$ (c) 14 (d) 49



- (8) Three coplanar forces are equal in magnitude meeting at a point and in equilibrium then the measure of angle between each two forces =°
 (a) 30 (b) 60 (c) 120 (d) 150
- (9) The center of the circle whose equation : $x^2 + y^2 - 6x + 30y = 5$ is the point
 (a) (3, 10) (b) (3, -15) (c) (3, 15) (d) (-3, 15)
- (10) A right circular cone its lateral area is $42\pi \text{ cm}^2$, the length of it drawer is 14 cm., then its circumference of base = cm.
 (a) 4π (b) 7π (c) 3π (d) 6π
- (11) Two skew straight lines are two straight lines which are
 (a) contained in the same plane (b) intersecting
 (c) parallel (d) not contained in the same plane

Second

Multiple choice questions

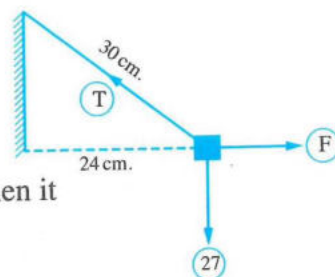
2 marks for each question

- (12) If : $\vec{F}_1 = 3\hat{i} - 2\hat{j}$, $\vec{F}_2 = a\hat{i} - \hat{j}$, $\vec{F}_3 = 4\hat{i} - b\hat{j}$ and their resultant is $\vec{R} = 6\hat{i} - 4\hat{j}$, then : $a + b =$
 (a) zero (b) 1 (c) 2 (d) 4

- (13) A regular quadrilateral pyramid its height is 12 cm., its volume is 400 cm^3 , then the length of its side base = cm.
 (a) 5 (b) 10 (c) 15 (d) 20

(14) In the opposite figure :

A body of weight 27 gm.wt. is attached to the end of a string of 30 cm. long. the body is pulled by a horizontal force of magnitude (F) it comes to equilibrium when it is 24 cm. apart from the wall then $T =$ gm.wt.



- (a) 63 (b) 27
 (c) 36 (d) 45
- (15) If θ is the angle between two forces of magnitudes 6 newton, 8 newton where $\theta \in [0, \frac{\pi}{2}]$ then the magnitude of their resultant measured by newton $\in$
 (a) [14, 100] (b) [2, 12] (c) [2, 10] (d) [10, 14]
- (16) A right circular cone, the radius length of its base = 7 cm. and the length of its drawer = 25 cm., then its volume = cm^3 . (where $\pi = \frac{22}{7}$)
 (a) 176 (b) 524 (c) 671 (d) 1232

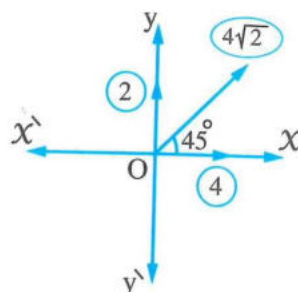
- (17) If the limiting friction force is 60 newton and coefficient of friction is $\frac{3}{4}$, then the magnitude of resultant reaction equals

(a) 60 (b) 80 (c) 100 (d) 200

- (18) In the opposite figure :

a set of forces intersecting at one point and measured in newton, then the magnitude of their resultant = newton.

(a) 10 (b) $4\sqrt{2}$
(c) 6 (d) $8\sqrt{2}$



Third Essay questions

- (19) MABCD is a regular quadrilateral pyramid the if length of its side base is 6 cm. and its height is 4 cm. , then : Find its total area.
- (20) A body of weight 60 kg.wt. is placed on a rough plane inclined to the horizontal with an angle of measure 30° the body is pulled upwards by a force parallel to the line of the greatest slope which make the body about to start motion upwards. If the coefficient of static friction between the body and the plane equal $\frac{1}{\sqrt{3}}$. Find the pull force ?

Answers of school examinations

1

Cairo

- (1) (d) (2) (b) (3) (b) (4) (a)
 (5) (d) (6) (a) (7) (b) (8) (d)
 (9) (d) (10) (d) (11) (d) (12) (d)
 (13) (a) (14) (b) (15) (a) (16) (b)
 (17) (b) (18) (c) (19)

∴ The pyramid is a triangular regular faces pyramid.

$$\therefore 2l^2 = 3h^2 \quad \therefore 2 \times (12)^2 = 3 \times h^2$$

$$\therefore h = 4\sqrt{6} \text{ cm.}$$

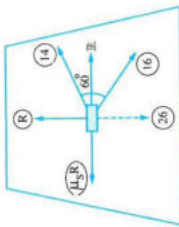
volume of the pyramid

$$= \frac{1}{3} \times \left(\frac{1}{2} l^2 \times \frac{\sqrt{3}}{2} \right) \times h = \frac{1}{3} \times \frac{1}{2} \times (12)^2 \times \frac{\sqrt{3}}{2} \times 4\sqrt{6}$$

$$= 144\sqrt{2} \text{ cm}^3$$

$$\text{or volume} = \frac{\sqrt{2}}{12} l^3 = \frac{\sqrt{2}}{12} \times (12)^3 = 144\sqrt{2} \text{ cm}^3$$

(20)



$$R = \sqrt{14^2 + 16^2} = 26 \times 14 \times 16 \times \cos 60^\circ = 26 \text{ newton.}$$

∴ The body is about to move.

$$\therefore 26 = \mu_s R \rightarrow R = 26 \quad \therefore 26 = 26 \mu_s$$

$$\therefore \mu_s = 1 \quad \therefore \tan \lambda = 1$$

∴ The measure of the angle of friction (λ) = 45°

2

Cairo

- (1) (b) (2) (b) (3) (b) (4) (d)
 (5) (c) (6) (c) (7) (d) (8) (b)
 (9) (c) (10) (b) (11) (c) (12) (d)
 (13) (c) (14) (a) (15) (d) (16) (a)
 (17) (d) (18) (b)

(19)

The volume = $\frac{1}{3} \times \text{base area} \times \text{the height}$

$$\therefore 384 = \frac{1}{3} \times (12)^2 \times h$$

$$\therefore h = 8 \text{ cm.}$$

The slant height = $\sqrt{(8)^2 + (6)^2} = 10 \text{ cm.}$

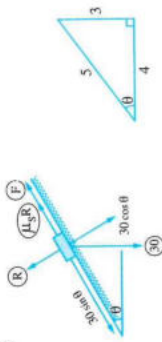
∴ its lateral area = $\frac{1}{2} \times \text{base perimeter} \times \text{slant height}$

$$= \frac{1}{2} \times (4 \times 12) \times 10 = 240 \text{ cm}^2$$

∴ The total area = lateral area + base area

$$\therefore \text{The total area} = 240 + (12)^2 = 384 \text{ cm}^2$$

(20)



∴ The body is about to move down.

$$\therefore R = 30 \cos \theta = 30 \times \frac{4}{5} = 24 \text{ kg wt.}$$

$$F = 30 \sin \theta - \mu_s R = 30 \times \frac{3}{5} - \frac{1}{6} \times 24$$

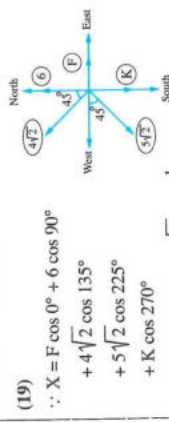
$$= 18 - 4 = 14 \text{ kg wt.}$$

∴ then the least force to prevent the body from slipping equals 14 kg wt.

3

Giza

- (1) (b) (2) (c) (3) (c) (4) (d)
 (5) (c) (6) (b) (7) (c) (8) (b)
 (9) (d) (10) (d) (11) (c) (12) (d)
 (13) (c) (14) (a) (15) (c) (16) (d)
 (17) (c) (18) (c) (19)



$$\therefore X = F \cos 0^\circ + 6 \cos 90^\circ$$

$$+ 4\sqrt{2} \cos 135^\circ$$

$$+ 5\sqrt{2} \cos 225^\circ$$

$$+ K \cos 270^\circ$$

$$= F \times 1 + 6 \times 0 + 4\sqrt{2} \times -\frac{1}{\sqrt{2}}$$

$$+ 5\sqrt{2} \times -\frac{1}{\sqrt{2}} + K \times 0$$

$$= F - 9$$

(20)

Let $\vec{AB}$ in the direction of $\vec{OX}$

$$\therefore X = 6 \cos 0^\circ + 2\sqrt{3} \cos 30^\circ + 6 \cos 60^\circ + 2\sqrt{3} \cos 90^\circ$$

$$\therefore X = 12$$

$$y = 6 \sin 0^\circ + 2\sqrt{3} \sin 30^\circ + 6 \sin 60^\circ + 2\sqrt{3} \sin 90^\circ$$

$$\therefore y = 6\sqrt{3}$$

$$\therefore R = \sqrt{(12)^2 + (6\sqrt{3})^2} = 6\sqrt{7} \text{ newton.}$$

$$\therefore \tan \theta = \frac{6\sqrt{3}}{12}$$

$$\therefore \theta = 40^\circ 54' \text{ with } \vec{AB}$$

5

Alexandria

- (1) (b) (2) (b) (3) (b) (4) (c)
 (5) (d) (6) (d) (7) (b) (8) (c)
 (9) (b) (10) (a) (11) (a) (12) (c)
 (13) (d) (14) (c) (15) (b) (16) (d)
 (17) (b) (18) (d) (19)

∴ The centre M (2, -3)

and pass through point A (-2, 0)

$$\therefore r = \sqrt{(2+2)^2 + (-3-0)^2}$$

$$\therefore r = 5 \text{ length units.}$$

∴ The equation of the circle is :

$$(X-2)^2 + (Y+3)^2 = 25$$

$$X^2 - 4X + 4 + Y^2 + 6Y + 9 - 25 = 0$$

∴ The general equation of the circle is :

$$X^2 + Y^2 - 4X + 6Y - 12 = 0$$

(20)

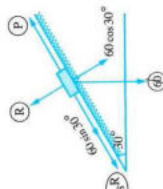
∴ The body is about to move upwards.

$$\therefore R = 60 \cos 30^\circ = 30\sqrt{3}$$

$$\therefore \mu_s R + 60 \sin 30^\circ = P$$

$$\frac{1}{\sqrt{3}} \times 30\sqrt{3} + 60 \times \frac{1}{2} = P$$

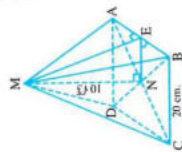
$$\therefore P = 60 \text{ kg wt.}$$



6

Alexandria

- (1) (b) (2) (c) (3) (d) (4) (c) (5) (c)
 (6) (b) (7) (c) (8) (a) (9) (c) (10) (a)
 (11) (c) (12) (c) (13) (c) (14) (d) (15) (d)
 (16) (a) (17) (a) (18) (a)



(2) Volume of the pyramid

$$= \frac{1}{3} \times \text{base area} \times \text{height}$$

$$= \frac{1}{3} \times (20)^2 \times 10\sqrt{3}$$

$$= \frac{4000}{3} \sqrt{3} \text{ cm}^3$$

(19)

∴ the body is about to move

$$\therefore R + 20 \sin 30^\circ = 40^\circ$$

$$R + 10 = 40$$

$$\therefore R = 30 \text{ newton.}$$

$$\therefore \mu_s R = 20 \cos 30^\circ = 10\sqrt{3}$$

$$\therefore 30 \mu_s = 10\sqrt{3}$$

$$\therefore \mu_s = \frac{10\sqrt{3}}{30} = \frac{\sqrt{3}}{3}$$

and the measure of the angle of friction is $\tan^{-1} \left(\frac{\sqrt{3}}{3} \right) = 30^\circ$

(20)

$$\therefore \overline{AB} \text{ is a diameter.}$$

$$\therefore M \text{ (centre of the circle)} = \left(\frac{6+0}{2}, \frac{-4+2}{2} \right) = (3, -1)$$

$$\text{and } MA \text{ is a radius.}$$

$$\therefore MA = \sqrt{(6-3)^2 + (-4+1)^2} = \sqrt{18} = 3\sqrt{2} \text{ units.}$$

∴ The equation of the circle is :

$$(X-3)^2 + (Y+1)^2 = (3\sqrt{2})^2$$

$$\therefore X^2 - 6X + 9 + Y^2 + 2Y + 1 = 18 = 0$$

∴ then the general form of the equation of the circle is

$$X^2 + Y^2 - 6X + 2Y - 8 = 0$$

7 El-Kalyoubia

$$(1) (a) (2) (a) (3) (a) (4) (c) (5) (d)$$

$$(6) (c) (7) (d) (8) (c) (9) (c) (10) (a)$$

$$(11) (c) (12) (b) (13) (a) (14) (a) (15) (a)$$

$$(16) (a) (17) (d) (18) (b)$$

$$(19)$$

$$\therefore \mu_s R = 20 \cos 30^\circ = 10\sqrt{3}$$

$$\therefore 30 \mu_s = 10\sqrt{3}$$

$$\therefore \mu_s = \frac{10\sqrt{3}}{30} = \frac{\sqrt{3}}{3}$$

$$\therefore \tan^{-1} \left(\frac{\sqrt{3}}{3} \right) = 30^\circ$$

$$\therefore \overline{AB} \text{ is a diameter.}$$

$$\therefore M \text{ (centre of the circle)} = \left(\frac{6+0}{2}, \frac{-4+2}{2} \right) = (3, -1)$$

$$\text{and } MA \text{ is a radius.}$$

$$\therefore MA = \sqrt{(6-3)^2 + (-4+1)^2} = \sqrt{18} = 3\sqrt{2} \text{ units.}$$

∴ The equation of the circle is :

$$(X-3)^2 + (Y+1)^2 = (3\sqrt{2})^2$$

$$\therefore X^2 - 6X + 9 + Y^2 + 2Y + 1 = 18 = 0$$

∴ then the general form of the equation of the circle is

$$X^2 + Y^2 - 6X + 2Y - 8 = 0$$

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$$X^2 + Y^2 - 6X + 2Y - 8 = 0$$

$$X^2 + Y^2 - 6X + 2Y - 8 = 0$$

$$X^2 + Y^2 - 6X + 2Y - 8 = 0$$

$$X^2 + Y^2 - 6X + 2Y - 8 = 0$$

$$\mu_s = \frac{1}{4}$$

$$\therefore \tan \lambda = \frac{1}{4}$$

$$\therefore \lambda = \tan^{-1} \left(\frac{1}{4} \right) = 14^\circ$$

∴ The measure of the angle of static friction

between the body and the plane is 14°

(20)

$$\therefore \text{Total surface area} = \pi r (l + r)$$

$$\therefore \pi r (l + r) = 90\pi$$

$$5(l + 5) = 90$$

$$l + 5 = 18$$

$$\therefore l = 13 \text{ cm.}$$

$$\therefore \text{the height} = \sqrt{13^2 - 5^2} = 12 \text{ cm.}$$

$$\therefore \text{The volume} = \frac{1}{3} \pi r^2 h = \frac{1}{3} \times \pi \times 5^2 \times 12$$

$$= 100\pi \text{ cm}^3$$

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9 El-Monofia

$$(1) (d) (2) (b) (3) (d) (4) (b) (5) (b)$$

$$(6) (d) (7) (b) (8) (c) (9) (c) (10) (b)$$

$$(11) (b) (12) (c) (13) (b) (14) (d) (15) (d)$$

$$(16) (c) (17) (d) (18) (b)$$

$$(19)$$

∴ The slant height

$$= \sqrt{(6)^2 + (8)^2} = 10 \text{ cm.}$$

The lateral area

$$= \frac{1}{2} \times (4 \times 16) \times 10$$

$$= 320 \text{ cm}^2$$

$$(1) \text{ The total area} = L.S.A + \text{base area} = 320 + (16)^2$$

$$= 576 \text{ cm}^2$$

$$(2) \text{ The volume} = \frac{1}{3} \times \text{base area} \times \text{height}$$

$$= \frac{1}{3} \times (16)^2 \times 6 = 512 \text{ cm}^3$$

$$(20)$$

∴ ΔABC is right-angled at B

$$\therefore AC = \sqrt{8^2 + 6^2} = 10 \text{ cm.}$$

$$\therefore \sin \alpha = \frac{6}{10} = \frac{3}{5}$$

$$\therefore \cos \alpha = \frac{8}{10} = \frac{4}{5}$$

$$\therefore X = 6 \cos 0^\circ$$

$$+ 13\sqrt{2} \cos 45^\circ + 2 \cos 90^\circ$$

$$+ 20 \cos (180^\circ + \alpha)$$

$$= 6 + 13 + 20 \times \frac{-4}{5} = 3$$

$$\therefore Y = 6 \sin 0^\circ + 13\sqrt{2} \sin 45^\circ + 2 \sin 90^\circ$$

$$+ 20 \sin (180^\circ + \alpha)$$

$$= 13 + 2 + 20 \times \frac{-3}{5} = 3$$

$$\therefore \vec{R} = 3\hat{i} + 3\hat{j}$$

$$\therefore R = \sqrt{3^2 + 3^2} = 3\sqrt{2} \text{ newton.}$$

$$\therefore \tan \theta = 1 \quad \therefore \theta = 45^\circ$$

∴ The magnitude of $\vec{R} = 3\sqrt{2}$ newton and makes

an angle of measure 45° with $\vec{AB}$

an angle of measure 45° with $\vec{AB}$

an angle of measure 45° with $\vec{AB}$

an angle of measure 45° with $\vec{AB}$

an angle of measure 45° with $\vec{AB}$

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an angle of measure 45° with $\vec{AB}$

10 El-Gharbia

$$(1) (d) (2) (b) (3) (c) (4) (a) (5) (d)$$

$$(6) (d) (7) (b) (8) (d) (9) (c) (10) (a)$$

$$(11) (b) (12) (b) (13) (c) (14) (d) (15) (c)$$

$$(16) (c) (17) (b) (18) (c)$$

$$(19)$$

∴ The set of forces

are in equilibrium.

∴ The line of action of

the weight passes

through the intersection

point of T_1 and T_2 which is C

$$\therefore (CB)^2 + (AC)^2 = (AB)^2$$

∴ The two strings are perpendicular.

$$\sin \alpha = \frac{3}{5} \text{ and } \sin \theta = \frac{4}{5}$$

Applying lami's rule :

$$\therefore \frac{T_1}{\sin \alpha} = \frac{T_2}{\sin \theta} = \frac{20}{\sin 90^\circ}$$

$$\therefore \frac{T_1}{\frac{3}{5}} = \frac{T_2}{\frac{4}{5}} = \frac{20}{1}$$

$$\therefore T_1 = 12 \text{ newton and } T_2 = 16 \text{ newton.}$$

$$(20)$$

Volume of the pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$

$$1296 = \frac{1}{3} \times (18)^2 \times \text{height}$$

$$\therefore \text{height} = 12 \text{ cm.}$$

$$\therefore \text{The slant height} = \sqrt{9^2 + (12)^2}$$

$$= 15 \text{ cm.}$$

The lateral area

$$= \frac{1}{2} \times (4 \times 18) \times 15 = 540 \text{ cm}^2$$

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$$= \frac{1}{2} \times (4 \times 18) \times 15 = 540 \text{ cm}^2$$

(19)

∴ The body is about to move

$$\therefore R = 20 \text{ kg.wt.}$$

$$\therefore \mu_s R = 5$$

$$20 \mu_s = 5$$

$$\therefore \mu_s = \frac{1}{4}$$

∴ The coefficient of static friction between the body and the plane is $\frac{1}{4}$

(20) ∴ The center of the circle is (3, -4) and its radius is 6 length units.

∴ The equation of the circle is :

$$(x-3)^2 + (y+4)^2 = 36$$

$$x^2 - 6x + 9 + y^2 + 8y + 16 - 36 = 0$$

∴ then the general equation of the equation of the circle is

$$x^2 + y^2 - 6x + 8y - 11 = 0$$

12 Ismailia

(1) (a) (2) (b) (3) (a) (4) (a)

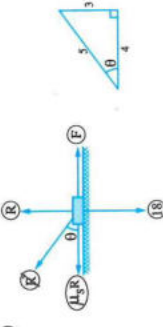
(5) (b) (6) (c) (7) (d) (8) (a)

(9) (c) (10) (c) (11) (b) (12) (d)

(13) (c) (14) (b) (15) (d) (16) (b)

(17) (a) (18) (a)

(19)



∴ The body is about to move

$$\therefore \mu_s = \tan(90^\circ - \theta) = \cot \theta = \frac{4}{3}$$

$$\therefore R = 18 \text{ gm.wt.}$$

$$\therefore F_s = \mu_s R = \frac{4}{3} \times 18 = 24 \text{ gm.wt.}$$

$$\therefore \vec{R} = \sqrt{R^2 + F_s^2} = \sqrt{18^2 + 24^2} = 30 \text{ gm.wt.}$$

(20) ∴ $\overline{AB}$ is a diameter

$$\therefore M (\text{centre of the circle}) = \left(\frac{3+3}{2}, \frac{2+10}{2} \right) = (3, 6)$$

∴ the radius length = MA

$$\therefore r = \sqrt{(3-3)^2 + (6-2)^2} = 4 \text{ length units}$$

∴ The equation of the circle is :

$$(x-3)^2 + (y-6)^2 = 16$$

13 Damietta

(1) (d) (2) (a) (3) (c) (4) (b)

(5) (c) (6) (b) (7) (a) (8) (b)

(9) (b) (10) (d) (11) (c) (12) (c)

(13) (a) (14) (b) (15) (d) (16) (b)

(17) (c) (18) (c)

(19) ∴ ΔAHB is right-angled at B

$$\therefore AH = \sqrt{(5)^2 + (12)^2} = 13 \text{ cm.}$$

$$\therefore \sin(\angle BAH) = \frac{5}{13}$$

$$\therefore \cos(\angle BAH) = \frac{12}{13}$$

∴ AC is a diagonal of the square ABCD

$$\therefore \alpha = 45^\circ$$

$$\therefore X = 2 \cos 0^\circ + 13 \cos(\angle BAH) + 9 \cos 90^\circ + 4\sqrt{2} \cos 225^\circ$$

$$= 2 \times 1 + 13 \times \frac{12}{13} + 9 \times 0 + 4\sqrt{2} \times \frac{-1}{\sqrt{2}} = 10$$

$$\therefore Y = 2 \sin 0^\circ + 13 \sin(\angle BAH) + 9 \sin 90^\circ + 4\sqrt{2} \sin 225^\circ$$

$$= 2 \times 0 + 13 \times \frac{5}{13} + 9 \times 1 + 4\sqrt{2} \times \frac{-1}{\sqrt{2}} = 10$$

$$\therefore \vec{R} = 10\hat{i} + 10\hat{j}$$

$$\therefore R = \sqrt{(10)^2 + (10)^2} = 10\sqrt{2} \text{ gm.wt.}$$

$$\therefore \tan \theta = \frac{10}{10} = 1$$

$$\therefore X > 0, Y > 0$$

$$\therefore \vec{R} \text{ acts due to } \overline{AC}$$

$$\therefore \theta = 45^\circ$$

(20) ∴ M (center of the circle) is (1, 2)

∴ the equation of the tangent is :

$$3x + 4y + 9 = 0$$

$$\therefore r = \frac{|3 \times 1 + 4 \times 2 + 9|}{\sqrt{3^2 + 4^2}}$$

$$r = \frac{|20|}{5} = 4 \text{ length units}$$

∴ The equation of the circle is :

$$(x-1)^2 + (y-2)^2 = 16$$

(19)

The slant height

$$= \sqrt{(3)^2 + (4)^2} = 5 \text{ cm.}$$

∴ The lateral area

$$= \frac{1}{2} \times \text{base perimeter}$$

$$\times \text{slant height}$$

$$\therefore \text{The lateral area} = \frac{1}{2} \times (4 \times 6) \times 5 = 60 \text{ cm}^2$$

∴ The total area = lateral area + base area

$$\therefore \text{The total area} = 60 + (6)^2 = 96 \text{ cm}^2$$

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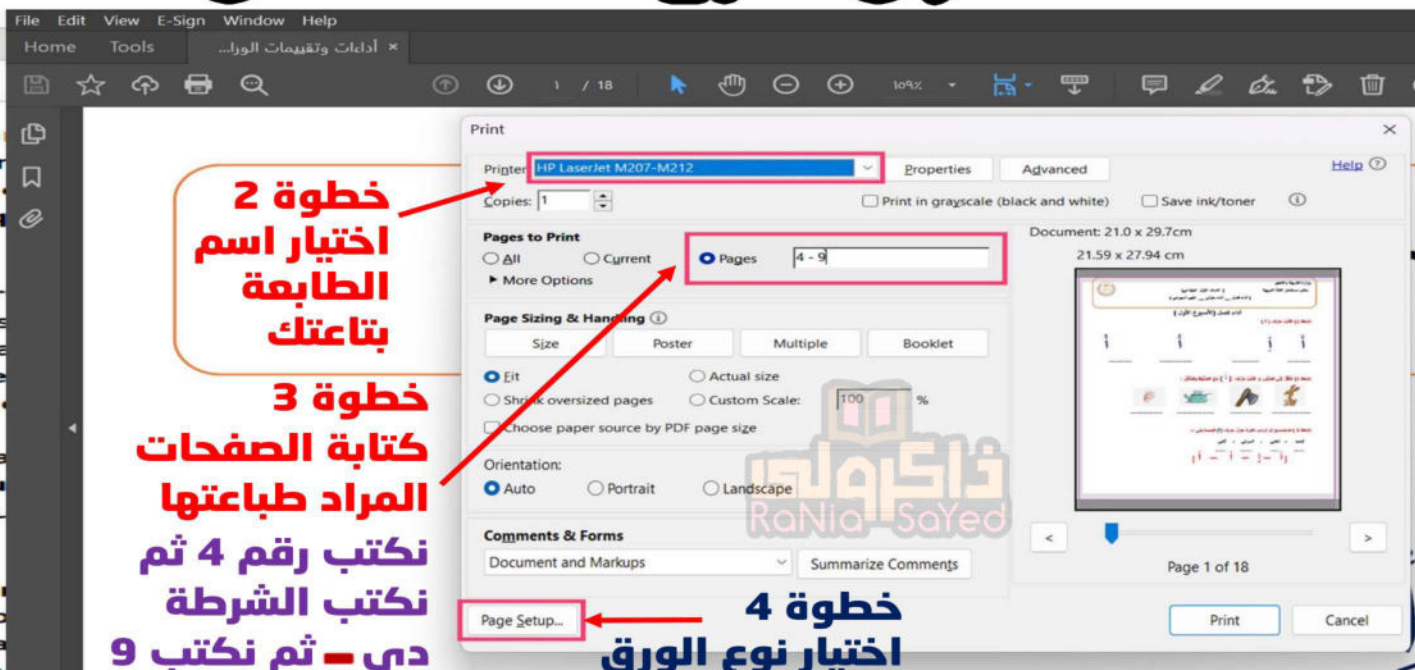
$$\therefore \text{The total area} = 60 + (6)^2 = 96 \text{ cm}^2$$

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كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



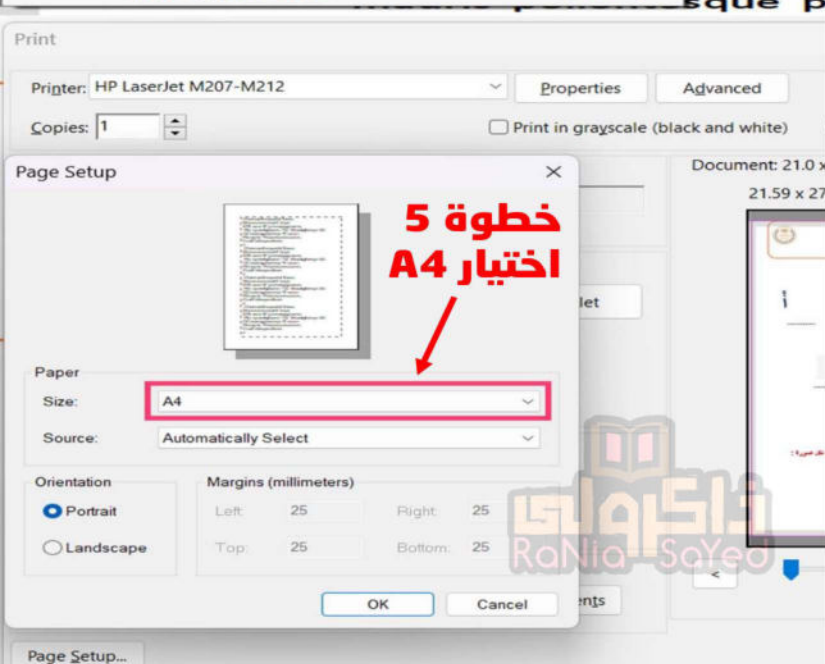
خطوة 1



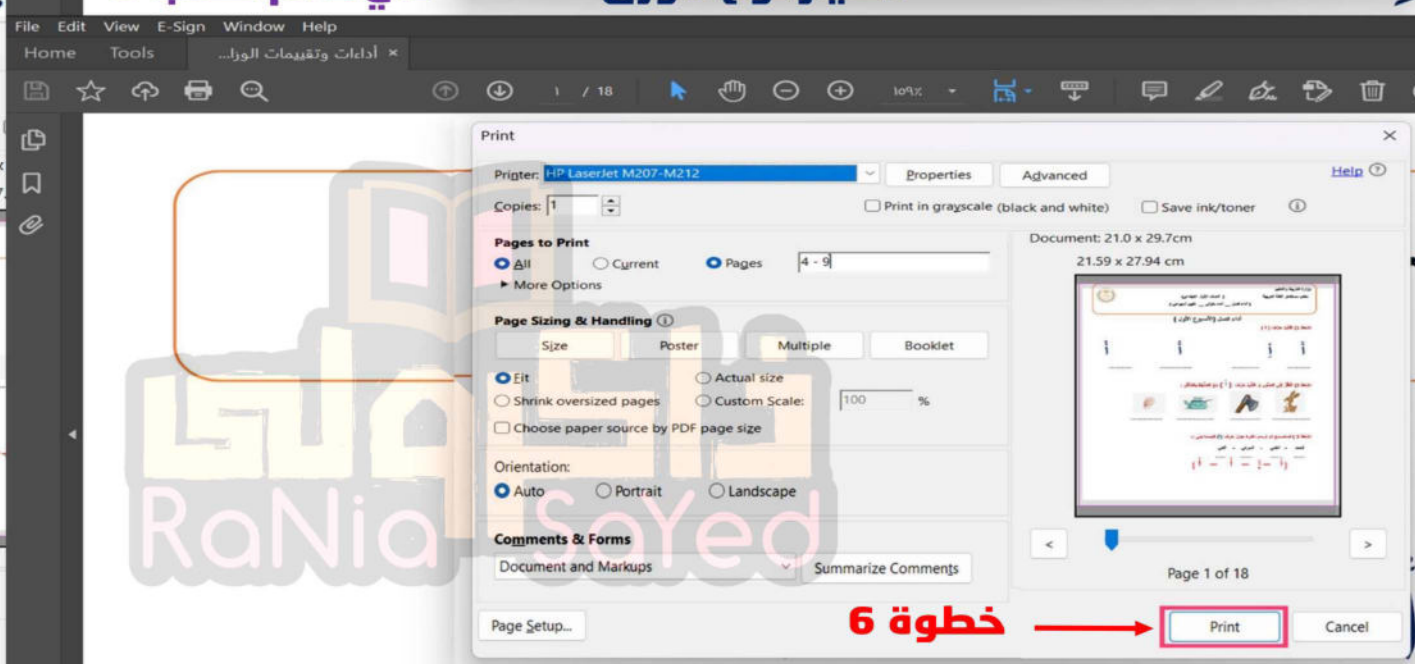
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6

حمل الآن

مجاناً وحصرياً

امتحانات رقم (2)

الترم الاول



1

Cairo Governorate

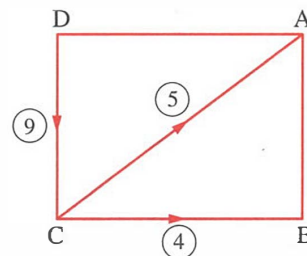
El-Zitoun Zone
Math's Supervision**First Multiple choice questions**Interactive
test ①**Choose the correct answer from those given :**

- (1) A regular triangular pyramid , its base length 6 cm.
and its height length 12 cm. , then its volume = cm^3
 (a) $12\sqrt{3}$ (b) $24\sqrt{3}$ (c) $36\sqrt{3}$ (d) $72\sqrt{3}$
- (2) The radius length of the circle whose equation : $2x^2 + 2y^2 + 12x - 32 = 0$
is length unit.
 (a) 3 (b) 4 (c) 5 (d) 8

(3) In the opposite figure :

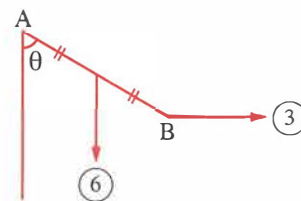
ABCD is a rectangle, $AB = 6$ cm.
 $BC = 8$ cm. , forces of magnitude
 $4, 5, 9$ newton act along $\overrightarrow{CB}, \overrightarrow{CA}, \overrightarrow{DC}$ respectively
 , then magnitude of the resultant = newton.

- (a) 16 (b) 10
 (c) 12 (d) 14

**(4) In the opposite figure :**

$\overline{AB}$ is a uniform rod connected to a hinge
 at point A in the wall if the rod is kept in
 equilibrium by horizontal force act at B
 , then $m(\angle \theta) = \dots\dots\dots^\circ$

- (a) 30 (b) 45 (c) 60 (d) 75



- (5) Two forces act at a point the magnitude of the two forces 6 , 8 newton and the measure
of the included angle between them $\theta \in [0, \frac{\pi}{2}]$, then the magnitude of their resultant
could be equal newton.
 (a) 5 (b) 10 (c) 12 (d) 16
- (6) The area of the circle whose equation $x^2 + y^2 = \pi$ equals square unit
 (a) π (b) 2π (c) 3π (d) π^2
- (7) A regular quadrilateral pyramid , its base length 10 cm. and its slant height 13 cm. , then
its volume = cm^3
 (a) 400 (b) 300 (c) 200 (d) 100

(8) A right circular cone where its height length 4 cm. and the length of its drawer 5 cm.
 , then its volume = cm^3

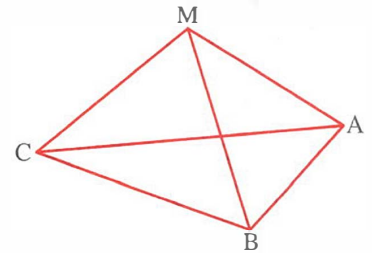
- (a) 12π (b) 15π (c) 24π (d) 36π

(9) In the opposite figure :

$M \notin \text{plane ABC}$

, then the plane $MAB \cap \text{the plane ABC} = \dots\dots\dots$

- (a) $\emptyset$ (b) $\overline{AB}$
 (c) $\{M\}$ (d) $\overleftrightarrow{AB}$

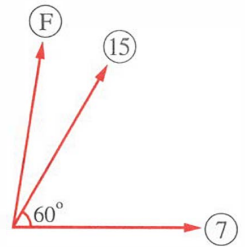


(10) In the opposite figure :

The force 15 newton is resolved into two
 components 7 and F newton

, then F = newton

- (a) 5 (b) 7
 (c) 13 (d) 18



(11) Two forces act at a point the magnitude of the two forces $(3F - 8)$, F newton and their
 resultant bisects the included angle between them , then F = newton

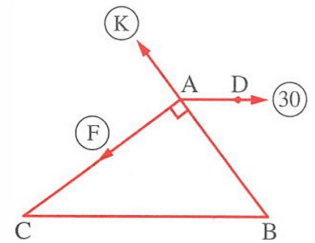
- (a) 2 (b) 4 (c) 6 (d) 8

(12) In the opposite figure :

$\overrightarrow{AD} \parallel \overrightarrow{BC}$, $\frac{AB}{AC} = \frac{3}{4}$

If the forces are equilibrium , then $F + K = \dots\dots\dots$

- (a) 16 (b) 21
 (c) 32 (d) 42



(13) A triangular regular faces pyramid , its edge length 6 cm. , then total area = cm^2

- (a) $9\sqrt{3}$ (b) $12\sqrt{3}$ (c) $36\sqrt{3}$ (d) $72\sqrt{3}$

(14) Two forces act at a point their magnitude F , K newton where $F > K$ and their resultant is
 R where $R \in [2, 7]$, then $F^2 - K^2 = \dots\dots\dots$

- (a) 9 (b) 14 (c) 5 (d) 4.5

(15) Two forces act at a point their magnitude $(3F - 5)$, $(5 - F)$ newton and their resultant is
 2 F , then the measure of the angle between them =°

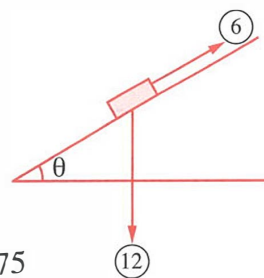
- (a) zero (b) 45 (c) 90 (d) 180

(16) If $\vec{F}_1 = 4\vec{i}$, $\vec{F}_2 = 3\vec{j}$ and $\vec{F}_3 = \vec{i} + 9\vec{j}$, then $\|\vec{R}\| = \dots\dots\dots$ force unit

- (a) 6 (b) 10 (c) 13 (d) 15

- (17) If a body of weight (12 kg.wt.) is placed on a smooth plane inclined to horizontal plane it is kept in equilibrium by force 6 newton in the direction of the plane upward , then $m (\angle \theta) = \dots\dots\dots^\circ$

(a) 30 (b) 45 (c) 60

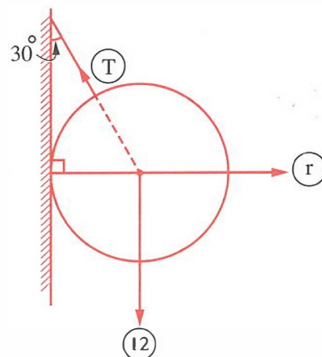


(d) 75

- (18) In the opposite figure :

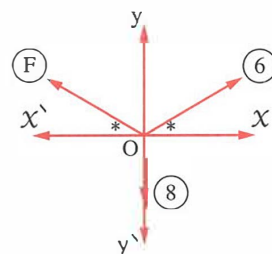
The smooth sphere of weight 12 newton rests against a smooth vertical wall , if the string makes with the vertical an angle of measure 30° , then in case of equilibrium $T - r = \dots\dots\dots$ newton.

(a) 4
(b) $4\sqrt{3}$
(c) 8
(d) $8\sqrt{3}$



- (19) If the resultant of the forces in the given figures acts in the direction of y-axis , then $F = \dots\dots\dots$ force unit.

(a) 2
(b) 6
(c) 8
(d) 14



- (20) The body is formed from rotation of a right-angled triangle a complete revolution about one of its right sides is

(a) cube (b) pyramid (c) cone (d) prism

Second

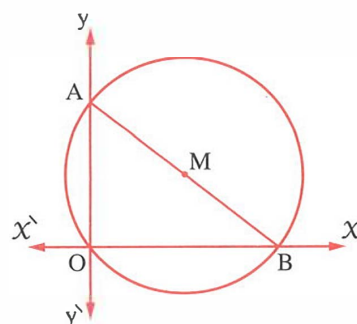
Essay questions

Answer the following questions :

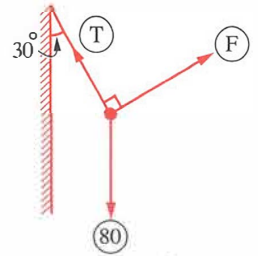
- 1 In the opposite figure :

OA = 6 unit length , OB = 8 unit length

Find the equation of the circle passes through ΔAOB



- 2** A body of weight 80 gm.wt. is suspended at one end of a string. the other end of the string is fixed at a point on a vertical wall with an angle of measure 30° . A force of magnitude F acts perpendicular to the string to become in equilibrium. Find the magnitude of the force and the tension in the string.



2

Cairo Governorate



**Helwan Zone
Mathematics Supervision**

First

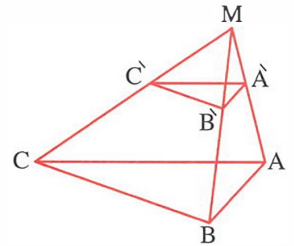
Multiple choice questions



**Interactive
test ②**

Choose the correct answer from those given :

- (1) The given figure MABC is a triangular pyramid :
the plane $ABC \parallel$ the plane $\hat{A} \hat{B} \hat{C}$
, then the following are true except
(a) $\overleftrightarrow{AC}$ and $\overleftrightarrow{MB}$ are skew lines
(b) $\overleftrightarrow{AB}$ and $\overleftrightarrow{BC}$ are parallel lines
(c) $\overleftrightarrow{AA}$ and $\overleftrightarrow{BB}$ are intersecting lines
(d) $\overleftrightarrow{AM} \subset$ the plane ABB
- (2) If the base side length of a regular quadrilateral pyramid is 18 cm. and its lateral area is 540 cm^2 , then its volme is cm^3
(a) 1296 (b) 1620 (c) 2160 (d) 2700
- (3) If the total area of a regular faces pyramid is $144\sqrt{3} \text{ cm}^2$, then its height is equal cm.
(a) $4\sqrt{6}$ (b) $8\sqrt{6}$ (c) $6\sqrt{3}$ (d) $12\sqrt{3}$
- (4) If the point (3 , d) is the centre of the circle $x^2 + y^2 - e x + 10 y = k$ and its diameter length is 12 cm. , then $7k + e + d =$
(a) -15 (b) -13 (c) 13 (d) 15
- (5) The equation of the circle passing through the vertices of triangle ABC , where A (4 , 2) , B (0 , -6) and C is the origin point is
(a) $(x - 2)^2 + (y + 2)^2 = 20$ (b) $x^2 + (y + 3)^2 = 9$
(c) $(x - 2)^2 + (y - 1)^2 = 5$ (d) $(x - 4)^2 + (y + 3)^2 = 25$
- (6) If the total area of right circular cone is $756\pi \text{ cm}^2$ and the length of its drawer is 24 cm. , then the length of its base radius is equal to cm.
(a) 42 (b) 24 (c) 18 (d) 12



- (7) The given figure represents a net of a cone

, then the volume of this cone = $\pi \text{ cm}^3$

- (a) $9\sqrt{3}$ (b) 18 (c) $36\sqrt{3}$ (d) 72



- (8) If the resultant of two forces of magnitudes 4 and $4\sqrt{3}$ newton acting at a point is 4 newton

, then the measure of the angle between them is $^\circ$

- (a) 30 (b) 60 (c) 120 (d) 150

- (9) If the angle between two equal forces is $\frac{\pi}{3}$ and the magnitude of their resultant is $12\sqrt{3}$ newton, then the magnitude of each force is newton

- (a) $12\sqrt{3}$ (b) 12 (c) $6\sqrt{3}$ (d) 6

- (10) Two perpendicular forces of magnitudes 12 and $4F$ newton act at a point. If their resultant is $3F + 8$ where $F \in \mathbb{Z}^+$ newton and the angle between the resultant and the force of magnitude 12 newton is θ° , then $\cos \theta =$

- (a) $\frac{3}{5}$ (b) $\frac{4}{5}$ (c) $\frac{5}{13}$ (d) $\frac{12}{13}$

- (11) If the minimum value of the resultant of two forces of magnitudes $7F$ and $3F$ newton is 20 newton, then the value of the maximum value of the resultant = newton

- (a) 40 (b) 50 (c) 60 (d) 70

- (12) If $\vec{F}_1 = 8\vec{i} + b\vec{j}$, $\vec{F}_2 = -6\vec{i} + 3\vec{j}$ and $\vec{F}_3 = b\vec{i} - a\vec{j}$ are three equilibrium forces intersect at a point, then $a + 2b =$

- (a) 9 (b) 1 (c) -3 (d) -5

- (13) Two forces $\vec{F}_1 = 2\vec{i} + 7\vec{j}$ and $\vec{F}_2 = (6\sqrt{2}, \frac{3\pi}{4})$ and their resultant is $\vec{R} = k\vec{i} - m\vec{j}$, then $3k + m =$

- (a) 23 (b) 11 (c) -13 (d) -25

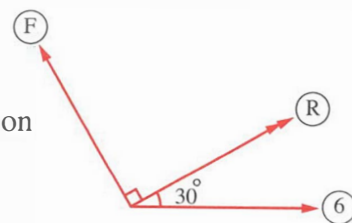
- (14) If $\vec{R}$ is the resultant of the two forces $\vec{F}_1$ and $\vec{F}_2$ and $\vec{R}$ is perpendicular to the force $\vec{F}_1$, then $F_1^2 + F_2^2 + R^2 =$

- (a) $2F_1^2$ (b) $2F_2^2$ (c) $2R^2$ (d) zero

- (15) In the given figure :

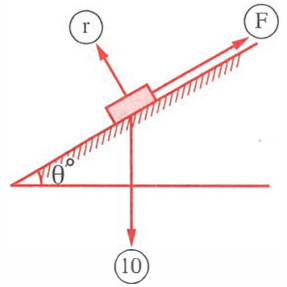
Two forces of magnitudes 6 and F and the magnitude of their resultant R , if the resultant inclined to the line of action of the force of magnitude 6 with an angle of measure 30° , then $F + \sqrt{3}R =$

- (a) $12\sqrt{3}$ (b) $6\sqrt{3}$ (c) 12 (d) 6



- (16) In the figure a body is placed on a smooth plane inclined to the horizontal at an angle of measure θ where $\tan \theta = \frac{3}{4}$. It is pulled by a force of magnitude F in direction in the line of greatest slope upward.

If r is the normal reaction, then $F + 2r = \dots\dots\dots$



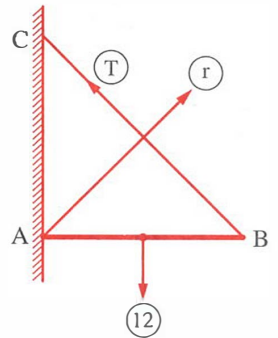
- (a) 22 (b) 11
(c) 20 (d) 10

- (17) Three forces of magnitudes 60, F and K newton act at a point are in equilibrium. If the measure of the angle between the first and second forces 120° and between the second and third forces is 90° , then $(F, K) = \dots\dots\dots$

- (a) $(30, 30\sqrt{3})$ (b) $(15, 15\sqrt{3})$ (c) $(15\sqrt{3}, 15)$ (d) $(30\sqrt{3}, 30)$

- (18) In the opposite figure :

$\overline{AB}$ is a uniform rod of length 60 cm. and weight 12 kg.wt acting at its midpoint the end A is attached to a vertical wall by means of a hinge. The other end B is attached by a light string to the wall at a point C on the wall above A . If the string inclined to the horizontal plane at an angle of measure 45° , then $T + r = \dots\dots\dots$ kg.wt.

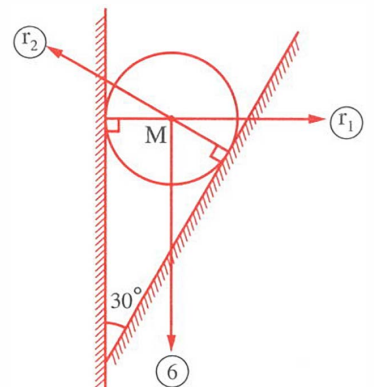


- (a) 12 (b) $12\sqrt{2}$
(c) $6 + 6\sqrt{2}$ (d) $12 + 12\sqrt{2}$

- (19) A body of weight 50 kg.wt. is equilibrium by means of two light strength. If the tension in the first is 25 kg.wt. and inclined to the horizon at an angle of measure θ_1 and if the tension in the second is $25\sqrt{3}$ kg.wt and inclined to the horizon at an angle of measure θ_2 , then $(\theta_1, \theta_2) = \dots\dots\dots$

- (a) $(30^\circ, 60^\circ)$ (b) $(60^\circ, 30^\circ)$ (c) $(45^\circ, 45^\circ)$ (d) $(45^\circ, 60^\circ)$

- (20) The given figure represents a sphere is placed between a smooth vertical wall and another one inclined to a vertical wall at an angle of measure 30° , then $\sqrt{3}r_1 + r_2 = \dots\dots\dots$



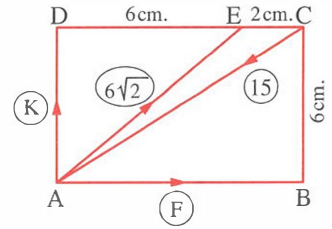
- (a) $18\sqrt{3}$ (b) $12\sqrt{3}$
(c) 30 (d) 24

Second Essay questions

Answer the following questions :

1 In the opposite figure :

ABCD is a rectangle. Forces of magnitudes $6\sqrt{2}$, 15, F and K act at $\overrightarrow{AE}$, $\overrightarrow{CA}$, $\overrightarrow{AB}$ and $\overrightarrow{AD}$ respectively. If the forces are in equilibrium, then find the values of F and K



2 If the length of the height of a regular triangular pyramid is 24 cm. and the length of its base height is 30 cm. find

- (a) The lateral area of the pyramid. (b) The volume of the pyramid.

3 Cairo Governorate



Ain Shams Zon

First Multiple choice questions



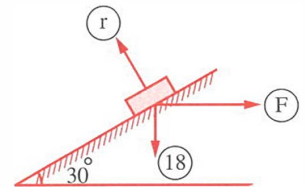
Interactive test 3

Choose the correct answer from those given :

(1) In the opposite figure :

A body of weight 18 newton is placed on a smooth plane inclined to the horizontal at an angle of measure 30° , it is kept in equilibrium by a horizontal force of magnitude F newton, then $F + r = \dots\dots\dots$

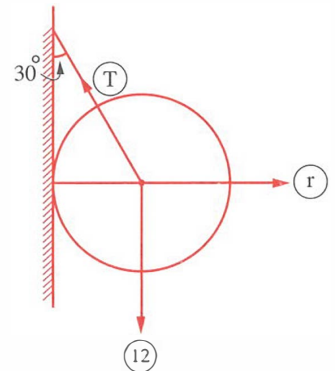
- (a) $6\sqrt{3}$ (b) $12\sqrt{3}$
(c) $18\sqrt{3}$ (d) $24\sqrt{3}$



(2) In the opposite figure :

If the sphere is in equilibrium, then $T - r = \dots\dots\dots$ newton where r is the magnitude of the wall reaction on the sphere.

- (a) $8\sqrt{3}$
(b) $4\sqrt{3}$
(c) 4
(d) 8



(3) Two forces of magnitudes 3, 4 newton their resultant is 7 newton, then the measure of the angle between them is $\dots\dots\dots$

- (a) 0° (b) 60° (c) 180° (d) 90°

(4) Two forces of magnitudes 8 , F newton and the angle between them is 120° , and their resultant $F\sqrt{3}$ newton , then $F = \dots\dots\dots$ newton.

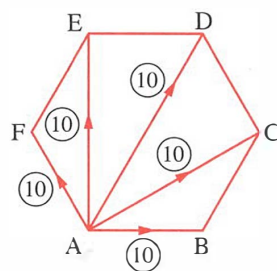
- (a) 4 (b) $4\sqrt{2}$ (c) $4\sqrt{3}$ (d) 8

(5) Two forces of magnitudes 4 , 6 newton , the measure of the angle between them is 90° , then the tangent of the angle between the resultant and first force equals $\dots\dots\dots$

- (a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $2\sqrt{3}$ (d) $\frac{\sqrt{6}}{2}$

(6) Five forces equal in magnitude each equals 10 newton act on one of vertices of a regular hexagon in directions of the other vertices as shown in the opposite figure , then the resultant of this forces is $\dots\dots\dots$ newton.

- (a) 50 (b) 20
(c) $30\sqrt{3}$ (d) $20 + 10\sqrt{3}$



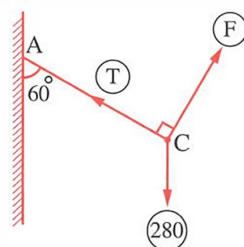
(7) Two forces are equal in magnitude and the magnitude of their resultant is 24 newton and the measure of the angle between the resultant and one of the two forces is 30° , then the magnitude of each force = $\dots\dots\dots$ newton

- (a) 8 (b) $8\sqrt{3}$ (c) $8\sqrt{2}$ (d) 12

(8) In the opposite figure :

A lamp of weight 280 gm.wt is attached to the end of a string , it is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T} = \dots\dots\dots$

- (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$



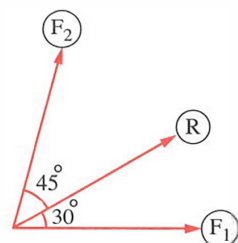
(9) If $\vec{R}$ is the resultant of the two forces $\vec{F}_1$, $\vec{F}_2$, where $F_2 > F_1$, then which of the following conditions is enough to make $\vec{R} \perp \vec{F}_1$?

- (a) $R^2 = F_2^2 - F_1^2$ (b) $R^2 = F_2^2 + F_1^2$ (c) $\vec{F}_1 \perp \vec{F}_2$ (d) All of previous

(10) In the opposite figure :

The force $\vec{R}$ is the resultant of the two forces $\vec{F}_1$, $\vec{F}_2$, then $F_2 = \dots\dots\dots$

- (a) $\frac{R \sin 45^\circ}{\sin 75^\circ}$ (b) $R \sin 30^\circ$
(c) $\frac{R \sin 30^\circ}{\sin 75^\circ}$ (d) $R \sin 45^\circ$



- (11) Three coplanar forces of magnitudes 60 , F and K newton meeting at a point and in equilibrium. If the angle between the 1st and the 2nd forces is of measure 120° and between the 2nd and the 3rd is of measure 90° , then the value of K = newton.
 (a) $30\sqrt{3}$ (b) $30\sqrt{2}$ (c) 30 (d) 60
- (12) The maximum value of the resultant of two forces is 25 newton and minimum value of their resultant is 13 newton , then their magnitudes are
 (a) 25 , 13 (b) 13 , 12 (c) 19 , 6 (d) 7 , 20
- (13) Two non parallel planes intersect at
 (a) A point (b) a straight line (c) a plane (d) a ray
- (14) Right circular cone , area of its base = $25 \pi \text{ cm}^2$, length of its drawer = 13 cm. , then its lateral area = cm^2
 (a) 50π (b) 65π (c) 90π (d) 100π
- (15) The point which lies on the circle $(x - 2)^2 + y^2 = 13$ is
 (a) (2 , 3) (b) (2 , -3) (c) (2 , 5) (d) (4 , 3)
- (16) A regular quadrilateral pyramid. the perimeter of its base = 40 cm. and its height 12 cm. , then its lateral surface area = cm^2
 (a) 200 (b) 240 (c) 260 (d) 320
- (17) Number of the planes which passes through two given points is
 (a) zero (b) 1 (c) 2 (d) infinite
- (18) A right circular cone , length of its drawer 17 cm. , and its height 15 cm. , the radius length of its base = cm.
 (a) 8 (b) 13 (c) 7 (d) 12
- (19) The circumference of the circle which its equation is $x^2 + y^2 = 8$ is
 (a) 8π (b) 64π (c) $2\sqrt{2} \pi$ (d) $4\sqrt{2} \pi$
- (20) The volume of the regular quadrilateral pyramid , where the perimeter of its base = 36 cm. and its height 10 cm. is cm^3
 (a) 180 (b) 270 (c) 360 (d) 810

Second

Essay questions

Answer the following questions :

- 1 AB is a uniform rod , its end A is attached by a hinge fixed in vertical wall A horizontal force acts at the end B to keep rod in equilibrium while it inclined to the wall by an angle of measure 45° , if the weight of the rod is 4 kg.wt acts at its midpoint , then find the magnitude of the force and the reaction of the hinge.
- 2 A regular quadrilateral pyramid. the side length of its base is 18 cm. and its volume is 1296 cm^3 , find its slant height and its lateral surface area.



First

Multiple choice questions



Interactive test (4)

Choose the correct answer from those given :

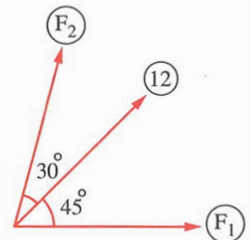
- (1) Two forces act at a point. The magnitude of the two forces are 6 , 3 newton and their resultant is perpendicular to one of them , then the magnitude of their resultant = newton.

(a) 3 (b) $3\sqrt{3}$ (c) 6 (d) $6\sqrt{3}$

- (2) In the opposite figure :

If the force of magnitude 12 N. is resolved into two components $\vec{F}_1$ and $\vec{F}_2$, then $F_1 =$ newton.

(a) $12 \cos 75^\circ$ (b) $12 \cos 45^\circ$
(c) $6 \csc 45^\circ$ (d) $6 \csc 75^\circ$



- (3) If $\vec{F}_1 = \vec{i} - \vec{j}$, $\vec{F}_2 = 2\vec{i} - 4\vec{j}$ and their resultant $\vec{R} = 2a\vec{i} - 3b\vec{j}$, then $a + b =$

(a) 3 (b) $3\frac{1}{3}$ (c) $3\frac{1}{6}$ (d) 12

- (4) If the two straight lines L_1 and L_2 are skew , then $L_1 \cap L_2 =$

(a) $\emptyset$ (b) L_1
(c) L_2 (d) the plane contains L_1 and L_2

- (5) Three equal forces in magnitude meeting at a point and they are in equilibrium , then the measure of the angle between each two forces =

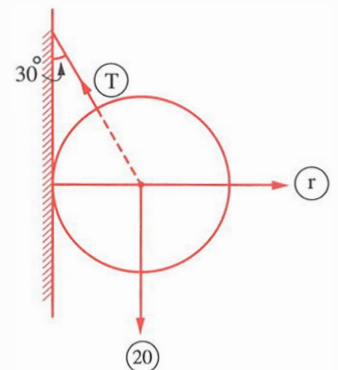
(a) 60° (b) 90° (c) 120° (d) 150°

- (6) Number of planes that are passing through two different parallel straight lines =

(a) 1 (b) 2 (c) 3 (d) an infinite number.

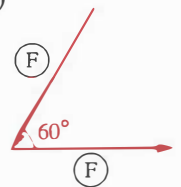
- (7) In the opposite figure :

A smooth sphere of weight 20 newton rests against a smooth vertical wall. It is suspended at a point on its surface by means of a string and the other end is fixed to the wall at a point lies directly above the point of tangency of the sphere and the wall , if the string makes with the vertical an angle of measure 30° , then in case of equilibrium $T : r =$



(a) 2 : 1 (b) 1 : 2
(c) $\sqrt{3} : 1$ (d) $2 : \sqrt{3}$

- (8) A regular quadrilateral pyramid, the area of its base = 100 cm^2 and its height is 12 cm., then its lateral area equal cm^2
 (a) 260 (b) 520 (c) 130 (d) 360
- (9) Two forces of magnitudes 6 N. and 8 N., if the magnitude of their resultant is 2 N., then the measure of the angle between the two forces is
 (a) 30° (b) 90° (c) 180° (d) 270°
- (10) The centre of the circle in which its diameter is $\overline{AB}$ where $A = (-1, 3)$, $B = (5, -3)$ is
 (a) (4, 0) (b) (2, 0) (c) (-6, -6) (d) (0, 4)
- (11) The centre of the circle whose equation $2x^2 + 2y^2 + 12x - 16y = 0$ is
 (a) (3, -4) (b) (-6, 8) (c) (-3, 4) (d) (6, -8)
- (12) The magnitude of the resultant of the two forces shown in the opposite figure is
 (a) $\frac{1}{2} F$ (b) F
 (c) $\sqrt{3} F$ (d) $\sqrt{5} F$
- (13) If $\vec{F}_1 = 4\vec{i}$, $\vec{F}_2 = 8\vec{i} - 5\vec{j}$, then $\|\vec{R}\| = \dots\dots\dots$ force unit.
 (a) 12 (b) 5 (c) 13 (d) $\sqrt{73}$
- (14) If $\vec{F}$ is in equilibrium with two perpendicular forces of magnitudes 8 newton and 15 newton, then $F = \dots\dots\dots$ newton.
 (a) 7 (b) 17 (c) 23 (d) $7\sqrt{2}$
- (15) A force of magnitude $10\sqrt{2}$ gm.wt. acts in the Eastern South direction, is resolved into two perpendicular components, then the magnitude of the component in the South direction = gm.wt.
 (a) 5 (b) 10 (c) $10\sqrt{2}$ (d) $5\sqrt{2}$
- (16) Three coplanar forces : $\vec{F}_1 = 6\vec{i} + 7\vec{j}$, $\vec{F}_2 = a\vec{i} - 9\vec{j}$, $\vec{F}_3 = 5\vec{i} + b\vec{j}$ act at a particle and they are in equilibrium, then $a + 2b = \dots\dots\dots$
 (a) -9 (b) 5 (c) 7 (d) -7
- (17) A regular quadrilateral pyramid whose lateral area = 30 cm^2 , and its slant height = 5 cm., then its base perimeter = cm.
 (a) 6 (b) 12 (c) 24 (d) 36
- (18) In a right circular cone, the radius length of its base = 15 cm. and its height = 20 cm., then its lateral area = cm^2
 (a) 375π (b) 600π (c) 1500π (d) 1875π



- (19) The diameter length of the circle : $4x^2 + 4y^2 + 16x - 8y - 16 = 0$ equals length unit.
 (a) 3 (b) 6 (c) 12 (d) 24
- (20) The force which is in equilibrium with two perpendicular forces F , F newton makes with one of the two forces an angle of measure°
 (a) 90 (b) 120 (c) 135 (d) 150

Second Essay questions

Answer the following questions :

- 1 A regular quadrilateral pyramid whose base area is 700 cm^2 and its slant height is 20 cm. Find its volume.
- 2 A smooth sphere of radius length 30 cm. and of weight 200 gm.wt. rests on a vertical smooth wall. It is suspended by a string of length 20 cm. , one of its ends is attached to a point on the surface of the sphere and the other end is fixed at a point on the wall above the touch point of the sphere and the wall.
 Find the magnitudes of the tension in the string and the reaction of the wall in case of equilibrium.

5

Giza Governorate



Awseem Directorate
Mathematics Inspection

First Multiple choice questions



Interactive
test 5

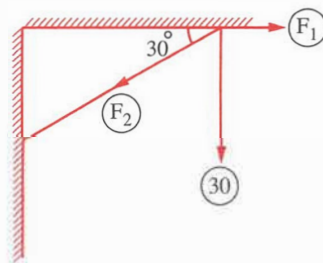
Choose the correct answer from those given :

- (1) Two forces are equal and the magnitude of their resultant is 8 newton when the measure of the angle between them is 90° then the greatest value of their resultant = newton.
 (a) 16 (b) $8\sqrt{2}$ (c) $4\sqrt{2}$ (d) $16\sqrt{2}$
- (2) A right quadrilateral pyramid its total surface area = 70 cm^2 and its lateral surface area = 45 cm^2 , then its height = cm.
 (a) 2.5 (b) 5 (c) 4.5 (d) $\sqrt{14}$
- (3) Two forces of magnitude $7F$ and $8F$ and their resultant is F , then the measure of the angle between them =°
 (a) zero (b) 90 (c) 180 (d) 270
- (4) A force of magnitude 60 newton is resolved into two equal forces F , F and the measure of the angle between their lines of action is 60° , then $F =$
 (a) $20\sqrt{3}$ (b) $5\sqrt{3}$ (c) $10\sqrt{3}$ (d) 30

(5) In the opposite figure :

A force of magnitude 30 newton is resolved into two components , one of them is horizontal of magnitude F_1 and the other is of magnitude F_2 , then $F_1 = \dots\dots\dots$ newton.

- (a) 30 (b) 60
(c) $60\sqrt{3}$ (d) $30\sqrt{3}$



(6) Two forces of magnitudes 6 , F newton act at a point and the measure of the angle between them is 120° , then the magnitude of F which makes the resultant as great as possible is

- (a) 1 (b) 2 (c) 3 (d) 4

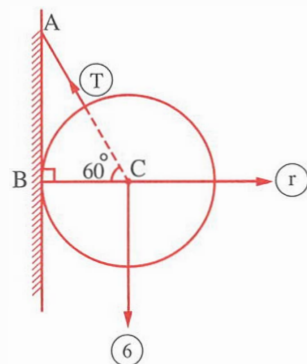
(7) The center of the circle whose equation is : $3x^2 + 3y^2 - 24x + 36y = 0$ is

- (a) (4 , - 6) (b) (12 , - 18) (c) (8 , - 12) (d) (- 4 , 6)

(8) In the opposite figure :

If the sphere is in equilibrium , then $T - r = \dots\dots\dots$ newton.

- (a) $6\sqrt{3}$
(b) $4\sqrt{3}$
(c) $2\sqrt{3}$
(d) 2



(9) Two perpendicular forces of magnitudes 2.5 newton and 6 newton act at a point , then their resultant inclines to the first force by an angle of measure

- (a) $67^\circ 23'$ (b) $157^\circ 23'$ (c) $337^\circ 23'$ (d) $22^\circ 37'$

(10) If the X-axis touches the circle : $x^2 + y^2 + mx + 4y + 7 - 3m = 0$, then $m = \dots\dots\dots$

- (a) 2 or 14 (b) - 2 or - 14 (c) 2 or - 14 (d) - 2 or 14

(11) If the forces $\vec{F}_1 = 5\vec{i} - 4\vec{j}$, $\vec{F}_2 = -6\vec{i} + a\vec{j}$, $\vec{F}_3 = b\vec{i} + 7\vec{j}$ are meeting at a point and are in equilibrium , then $a + b = \dots\dots\dots$

- (a) - 2 (b) 2 (c) - 3 (d) 1

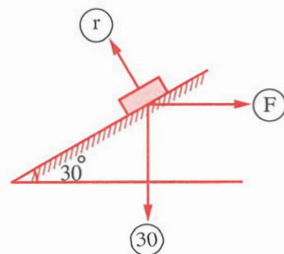
(12) The number of planes that pass through three collinear points is

- (a) 1 (b) 2 (c) 3 (d) infinite number.

(13) In the opposite figure :

$F + r = \dots\dots\dots$ Newton.

- (a) $20\sqrt{3}$ (b) $10\sqrt{3}$
(c) $30\sqrt{3}$ (d) 30

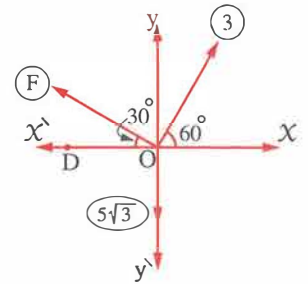


(14) A triangular pyramid of regular faces of height 6 cm. , then its volume = cm³

- (a) $18\sqrt{2}$ (b) $9\sqrt{3}$ (c) $18\sqrt{3}$ (d) $27\sqrt{3}$

(15) If the resultant of the forces in the opposite figure acts in the y-axis , then $F =$ kg.wt.

- (a) 5
(b) 7
(c) 3
(d) $\sqrt{3}$



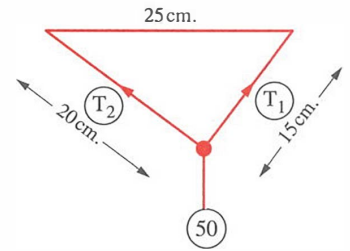
(16) If $\overleftrightarrow{XY} \subset \text{plane } M$, $\overleftrightarrow{LZ} \parallel \text{plane } M$, then $\overleftrightarrow{XY}$ and $\overleftrightarrow{LZ}$ are

- (a) only parallel. (b) only skew. (c) parallel or skew. (d) intersecting.

(17) In the opposite figure :

A body of weight 50 gm.wt. Is suspended by two strings of lengths 15 cm. and 20 cm. and the other two ends of the string are fixed on two points of a horizontal line the distance between them is 25 cm. , then $T_1 + T_2 =$ gm.wt.

- (a) 30 (b) 40 (c) 70 (d) 10



(18) A right circular cone if its base radius length is decreased to be half of its length and its height is increased to be double its length , then its volume will be

- (a) as it is (b) four times (c) its half (d) doubled

(19) ABCD is a rectangle in which $AB = 4$ cm. , $BC = 3$ cm. , forces of magnitude 2 , 5 , 3 act in the directions of $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ respectively , then the resultant of these forces =

- (a) $4\sqrt{2}$ (b) $6\sqrt{2}$ (c) $8\sqrt{2}$ (d) $10\sqrt{2}$

(20) A body of weight (W) newton is placed on a plane inclined to the horizontal at an angle of measure (θ) if the components of the weight in the direction of the line of the greatest slope and the perpendicular to it are 7 and 24 newton respectively , then the magnitude of the weight (W) =

- (a) 7 (b) 24 (c) 25 (d) 31

Second Essay questions

Answer the following questions :

- 1 A uniform rod of length 65 cm. and weight 26 newton is suspended at its ends by two strings tied at a point. If the length of one of them is 25 cm. and the length of the other is 60 cm. What is the tension in each of the two strings ?
- 2 Find the equation of the circle whose center is (1 , 2) and touches the straight line :
 $3x + 4y + 9 = 0$

6

Alexandria Governorate



Al Agamy zone
Mathematics Inspection

First

Multiple choice questions

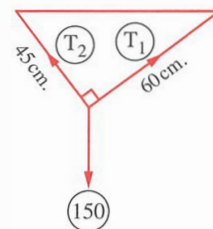


Interactive
test 6

Choose the correct answer from those given :

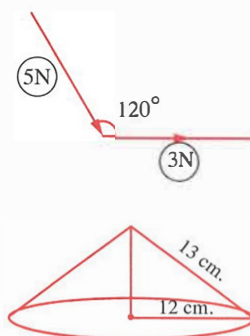
- (1) Two forces of magnitudes 4 and 6 newton. The measure of the angle between them is 90° , then the tangent of the angle between the resultant and the first force equal
 (a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $2\sqrt{13}$ (d) $\frac{\sqrt{6}}{2}$
- (2) The number of planes passes through 3 collinear points is
 (a) zero (b) 1 (c) 3 (d) infinite
- (3) Two forces F_1 , F_2 in which $3 \leq F_1 \leq 12$, $4 \leq F_2 \leq 16$ and $F_1 \perp F_2$, then R is given by
 (a) $5 \leq R \leq 20$ (b) $7 \leq R \leq 28$ (c) $0 \leq R \leq 18$ (d) $1 \leq R \leq 4$
- (4) $\vec{F}_1 = 3\vec{i} - 2\vec{j}$, $\vec{F}_2 = a\vec{i} - \vec{j}$, $\vec{R} = 5\vec{i} - b\vec{j}$, then $a - b =$
 (a) -1 (b) 1 (c) 3 (d) 5
- (5) In the opposite figure :

A body of weight 150 gm.wt. is in equilibrium by suspending it by two perpendicular strings as shown , then $T_2 - T_1 =$ gm.wt.



- (a) 120 (b) 90
(c) 60 (d) 30
- (6) The volume of a regular quadrilateral pyramid whose base perimeter 36 cm. and height 10 cm. equals cm^3 .
 (a) 810 (b) 270 (c) 180 (d) 120

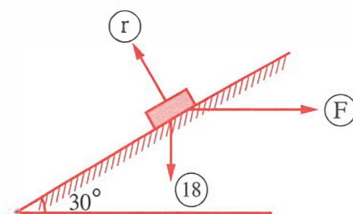
- (7) The resultant of the two forces F and $2F$ is perpendicular to the first force, then measure of the included angle between the two forces equals°
 (a) 30 (b) 60 (c) 90 (d) 120
- (8) A ball of pendulum of weight 600 dyne is in equilibrium when the string makes an angle of measure 30° with the vertical under the effect of a force perpendicular to the string, then the magnitude of the force = dyne
 (a) 1200 (b) 300 (c) $300\sqrt{2}$ (d) $300\sqrt{3}$
- (9) A body of weight W is placed on an inclined plane inclined to the horizontal by angle θ if the components of the weight in the directions of the plane and perpendicular to it are 7, 24 N, then $W =$
 (a) 7 (b) 24 (c) 25 (d) 31
- (10) A triangular regular faces pyramid its edge length is 4 cm., then its total area = cm^2
 (a) $4\sqrt{3}$ (b) $16\sqrt{3}$ (c) 4 (d) 16
- (11) Two forces equal in magnitude, the measure of the included angle is $\frac{\pi}{2}$, the magnitude of their resultant is 8 N, then the value of each force equals
 (a) 2 (b) $2\sqrt{2}$ (c) 4 (d) $4\sqrt{2}$
- (12) The ratio between the maximum and minimum value of the resultant of two forces is 7 : 3, then the ratio between the two forces is
 (a) 7 : 4 (b) 7 : 3 (c) 5 : 3 (d) 5 : 2
- (13) The radius length of the circle of equation :
 $(n+3)x^2 + y^2 + (m-n)x - 4y + (m-2)xy - 8 = 0$ is unit length.
 (a) 2 (b) 4 (c) 6 (d) 8
- (14) Two forces of magnitudes 8 and F Newton act at a point, the measure of the angle between them is 135° , if the resultant inclined with an angle of measure 45° to the force F , then $F =$ newton
 (a) $8\sqrt{2}$ (b) 8 (c) $18\sqrt{2}$ (d) $16\sqrt{2}$
- (15) The magnitude of the resultant of the two forces shown in the opposite figure is N
 (a) 19 (b) 7
 (c) $\sqrt{19}$ (d) $\sqrt{7}$
- (16) The central angle of the sector if folded
 It becomes the opposite cone is
 (a) acute (b) right
 (c) obtuse (d) reflex



(17) In the opposite figure :

a body of weight 18 N is placed on a smooth plane inclined to the horizontal by an angle of measure 30° it is kept in equilibrium by a horizontal force as shown , then $F + r = \dots\dots\dots$ N

- (a) $6\sqrt{3}$ (b) $12\sqrt{3}$ (c) $18\sqrt{3}$ (d) $24\sqrt{3}$



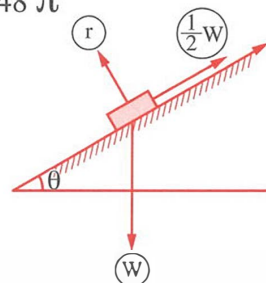
(18) The lateral area of a right cone whose base radius length 6 cm. and its height 8 cm. equals $\dots\dots\dots$ cm^2

- (a) 60π (b) 28π (c) 40π (d) 48π

(19) In the opposite figure :

The body is in equilibrium under acting of the shown forces , then $m(\angle \theta) = \dots\dots\dots^\circ$

- (a) 60 (b) 30
(c) 45 (d) 25



(20) The straight line $3x - 4y - 12 = 0$ touches the circle $(x + 3)^2 + (y - 1)^2 = r^2$, then the circumference of the circle = $\dots\dots\dots$

- (a) 5π (b) 10π (c) 15π (d) 20π

Second

Essay questions

Answer the following questions :

- 1** A metal sphere of weight 300 kg.wt. acts in its center placed between two smooth planes one of them is vertical and the other inclined 60° with the vertical find the reaction of the two planes in case of equilibrium.
- 2** A cube of wax of edge length 10 cm. it was melted and transformed into a regular quadrilateral pyramid of base length 10 cm. Find the height of the pyramid given that 10 % of the wax was lost during melting.

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Alexandria Governorate



**Borg Al-Arab Zone
Mathematics Inspection**

First

Multiple choice questions

Choose the correct answer from those given :

- (1)** Two forces of magnitudes 3 , 5 newton act at a point at a particle , if the magnitude of their resultant is 7 newton , then measure of the angle between them = $\dots\dots\dots^\circ$
- (a) 75 (b) 60 (c) 45 (d) 30



**Interactive
test 7**

(2) Two perpendicular forces and equal in magnitude , the magnitude of their resultant = 8 newton , then the magnitude of each of them = newton

- (a) 4 (b) 8 (c) $4\sqrt{2}$ (d) $2\sqrt{2}$

(3) Two forces of magnitudes 17 , F newton act at a point at a particle , the measure of the included angle between them = 120° and their resultant is perpendicular to the first force so the value of F = newton.

- (a) 13 (b) 15 (c) 24 (d) 34

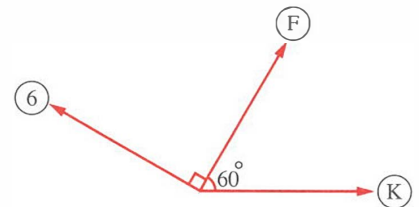
(4) A body of weight W newton is placed on a plane inclined to the horizontal at an angle of measure 30° if the component of the weight in the direction of the line of greatest slope = 25 newton , then the magnitude of W = newton

- (a) 50 (b) $50\sqrt{2}$ (c) $25\sqrt{2}$ (d) 35

(5) In the opposite figure :

If the force (F) is resolved into two components , then $K \div F = \dots\dots\dots$

- (a) 2 (b) $\sqrt{2}$
(c) 6 (d) $\sqrt{6}$



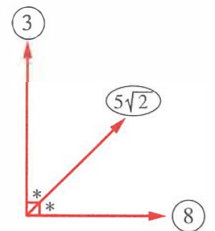
(6) If $\vec{F}_1 = 3\vec{i} - 2\vec{j}$, $\vec{F}_2 = a\vec{i} - \vec{j}$, $\vec{F}_3 = 4\vec{i} - b\vec{j}$, $\vec{R} = 6\vec{i} - 4\vec{j}$, then $a + b = \dots\dots\dots$

- (a) 1 (b) 2 (c) 0 (d) 3

(7) In the opposite figure :

The resultant $\approx \dots\dots\dots$ newton.

- (a) 12
(b) 13
(c) 15
(d) 16



(8) A body of weight 14 newton is placed on a smooth plane inclined to the horizontal at angle of measure θ and kept in equilibrium by force of magnitude 7 newton in the direction of the line of greatest slope of the plane upward , then $\theta = \dots\dots\dots^\circ$

- (a) 45 (b) 30 (c) 60 (d) 55

(9) A weight of magnitude W is suspended at the end of a string and the other end is fixed at a point of a vertical wall a force F acts on the weight in a perpendicular direction of the string till it become in equilibrium when the string inclined to the wall with an angle of measure 30° if the tension of the string = $30\sqrt{3}$ newton , then $W + F = \dots\dots\dots$ newton.

- (a) 30 (b) 60 (c) 90 (d) 45

- (10) A homogeneous sphere rests on two parallel rods lie on the same horizontal plane the distance between them $15\sqrt{2}$ cm. and the radius length of the sphere = 15 cm. and its weight = $12\sqrt{2}$ newton , then the sum of the two reaction on the two rods =
 (a) 12 (b) 36 (c) 15 (d) 24
- (11) The least number of coplanar unequal in magnitude forces could be in equilibrium is
 (a) 3 (b) 4 (c) 1 (d) 2
- (12) A uniform rod which is movable around one of its ends is pulled a side by horizontal force acting on the other end and equal half the weight of the rod , then the measure of the angle of inclination of the rod to the vertical =°
 (a) 30 (b) 45 (c) 57 (d) 60
- (13) A triangular regular faces pyramid whose edge length is 6 cm. , then its height = cm.
 (a) $6\sqrt{2}$ (b) $3\sqrt{2}$ (c) $2\sqrt{6}$ (d) 6
- (14) A right quadrilateral pyramid whose base is rhombus of two diagonal lengths 12 and 8 cm. , if the height of the pyramid = 10 cm. , then the volume of the pyramid = cm^3
 (a) 200 (b) 160 (c) 80 (d) 40
- (15) A regular triangular pyramid its base length 24 cm. and its height 4 cm. , then the length of its slant height = cm.
 (a) 12 (b) 16 (c) 8 (d) 7
- (16) A right circular cone its height 24 cm. and the length of its drawer 26 cm. , then its volume = cm^3
 (a) 500π (b) 800π (c) 700π (d) 600π
- (17) A right circular cone its total surface area = $24\pi \text{ cm}^2$ and the length of its drawer = 5 cm. then the radius length of its base = cm.
 (a) 3 (b) 5 (c) 6 (d) 8
- (18) A rigid body of weight 20 newton is placed on the inclined plane its length 10 m. and height 8 m. , then the components of weight in the perpendicular direction to the plane = newton.
 (a) 5 (b) 12 (c) 8 (d) 16
- (19) If $\overline{AB}$ is a diameter of the circle $(x - 5)^2 + (y - 5)^2 = 13$, A = (2 , k) , then one of the values of k =
 (a) 4 (b) 6 (c) 7 (d) 9
- (20) The equation of the circle its center is (3 , - 4) and touches X-axes is
 (a) $(x - 3)^2 + (y - 4)^2 = 13$ (b) $(x + 3)^2 + (y - 4)^2 = 16$
 (c) $(x - 4)^2 + (y - 3)^2 = 13$ (d) $(x - 3)^2 + (y + 4)^2 = 16$

Second **Essay questions**

Answer the following questions :

- 1** $\overline{AB}$ is a uniform rod , the end A is attached to a hinge fixed on the vertical wall and end B is tied by a light string passes over smooth pully C exactly above A and attached a weight half the weight of the rod find measure of the angle of inclination of the rod to the horizontal in state of equilibrium given that $AC = AB$
- 2** Find equation of the circle if its center is (2 , 2) and the straight line $3x = 4 - 4y$ is tangent to the circle.

8 El-Kalyoubia Governorate



Mathematics Inspection

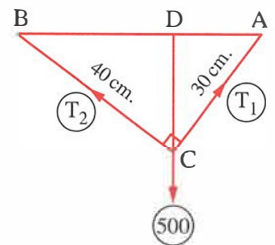
First **Multiple choice questions**



Interactive test **8**

Choose the correct answer from those given :

- (1)** Two forces F_1 and F_2 in directions East and North respectively and their resultant is $5\sqrt{3}$ newton , inclined 30° to North , then $F_1 = \dots\dots\dots$ newton.
 (a) 5 (b) $7\frac{1}{2}$ (c) $\frac{5\sqrt{3}}{2}$ (d) 15
- (2)** If three coplanar forces $\vec{F}_1 = 5\vec{i} + 3\vec{j}$, $\vec{F}_2 = a\vec{i} + 6\vec{j}$, $\vec{F}_3 = -14\vec{i} + b\vec{j}$ act at a point and their resultant $\vec{R} = (-10, 10)$, then $a + b = \dots\dots\dots$
 (a) - 1 (b) 1 (c) zero (d) 14
- (3)** Two forces of magnitudes $(5F + 50)$, $(7F + 10)$ newton acting at a point and the maximum resultant is 180 newton , then $F = \dots\dots\dots$ newton
 (a) 10 (b) 20 (c) 30 (d) 40
- (4) In the opposite figure :**
 If the system are in equilibrium.
 , then $T_1 + T_2 = \dots\dots\dots$
 (a) 100 (b) 300
 (c) 400 (d) 700
- (5)** Two forces of magnitudes $8\sqrt{3}$ and 8 newton act at a point the angle between them of measure 150° , then the magnitude of the resultant of the two forces = $\dots\dots\dots$ newton.
 (a) 64 (b) 32 (c) 16 (d) 8



(6) In the opposite figure :

If the system are in equilibrium

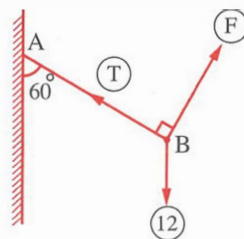
, then $\frac{F}{T} = \dots\dots\dots$

(a) $\frac{1}{\sqrt{3}}$

(b) $\sqrt{3}$

(c) $18\sqrt{3}$

(d) $12\sqrt{3}$



(7) Two forces act at a point. The magnitude of the two forces are 10 , 7 newton , then the magnitude of their resultant measure by newton $\in \dots\dots\dots$

(a)]7 , 10[

(b)]3 , 17[

(c) [7 , 10]

(d) [3 , 17]

(8) In the opposite figure :

$m(\angle A) = 30^\circ$

If the sphere is in equilibrium

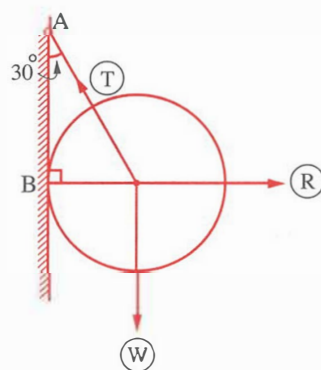
, then $R : T : W = \dots\dots\dots$

(a) $1 : \sqrt{3} : 2$

(b) $1 : 2 : \sqrt{3}$

(c) $\sqrt{3} : 1 : 2$

(d) $2 : \sqrt{3} : 1$



(9) In the opposite figure :

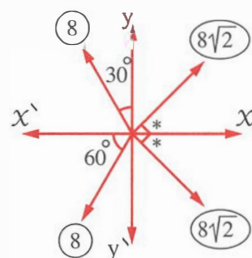
The resultant of the system of forces $R = \dots\dots\dots$ newton

(a) 8

(b) $8\sqrt{2}$

(c) 16

(d) $16\sqrt{2}$



(10) In the opposite figure :

ABCD is a rectangle.

If the system of forces are in equilibrium

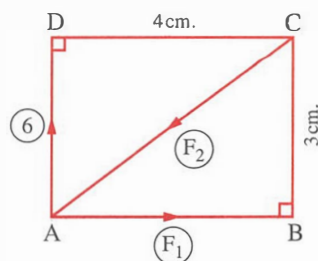
, then $F_1 + F_2 = \dots\dots\dots$

(a) 9

(b) 12

(c) 18

(d) 24



(11) The least number of coplanar unequal in magnitude forces could be in equilibrium is $\dots\dots\dots$

(a) 1

(b) 2

(c) 3

(d) 4

(12) In the opposite figure :

If the triangle ABC is rotated about $\overleftrightarrow{AB}$

with a full revolution , then the volume

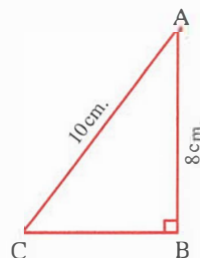
of the generated solid = $\dots\dots\dots \text{cm}^2$

(a) 48π

(b) 96π

(c) 128π

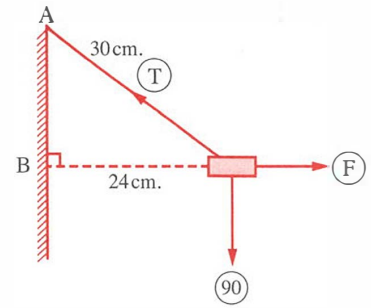
(d) 288π



(13) In the opposite figure :

If the system are in equilibrium
 , then $T - F = \dots\dots\dots$

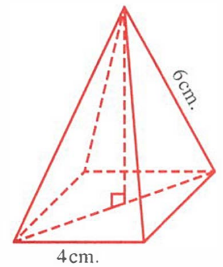
- (a) 150
- (b) 120
- (c) 50
- (d) 30



(14) In the opposite figure :

A regular quadrilateral pyramid ,
 then its volume is $\dots\dots\dots \text{cm}^3$

- (a) $32\sqrt{7}$
- (b) $\frac{32\sqrt{7}}{3}$
- (c) $\frac{64\sqrt{7}}{3}$
- (d) $64\sqrt{7}$



(15) The two circles : $(x-2)^2 + (y+1)^2 = 4$, $(x-5)^2 + (y-3)^2 = 9$ are $\dots\dots\dots$

- (a) touching externally
- (b) touching internally
- (c) concentric
- (d) distant

(16) Right circular cone the length of its base radius is 6 cm. and its height 8 cm. , then its lateral area = $\dots\dots\dots \text{cm}^2$

- (a) 60π
- (b) 28π
- (c) 10π
- (d) 48π

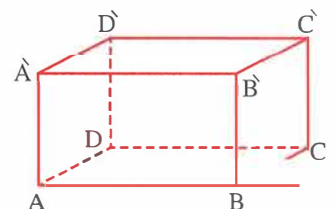
(17) In a triangular pyramid of regular faces , if the sum of lengths of its edges is 18 cm. , then its total area = $\dots\dots\dots \text{cm}^2$

- (a) $\frac{27\sqrt{2}}{4}$
- (b) $\frac{27\sqrt{3}}{4}$
- (c) $\frac{27\sqrt{3}}{2}$
- (d) $9\sqrt{3}$

(18) In the opposite figure :

plane $A\hat{A}B \cap \text{plane } A\hat{C}C \dots\dots\dots$

- (a) $\overleftrightarrow{AA}$
- (b) $\overleftrightarrow{BB}$
- (c) $\overleftrightarrow{CC}$
- (d) $\overleftrightarrow{AC}$



(19) A regular quadrilateral pyramid , the perimeter of its base = 50 cm. and its slant height 10 cm. , then its lateral area = $\dots\dots\dots \text{cm}^2$

- (a) 250
- (b) $250\sqrt{3}$
- (c) 500
- (d) 1000

(20) Number of the straight lines which passes through two coincident planes is $\dots\dots\dots$

- (a) 0
- (b) 1
- (c) 2
- (d) infinite

Second

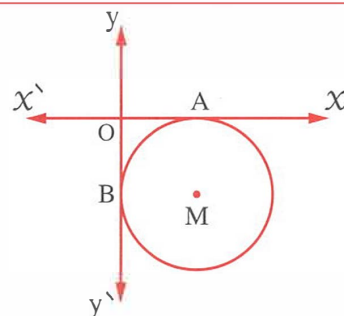
Essay questions

Answer the following questions :

- 1** Three coplanar forces of magnitudes 5 , 10 , $4\sqrt{7}$ newton act at a point , the measure of the angle between the first two forces equals 60° , find the greatest and the smallest magnitude of their resultant.

- 2** In the opposite figure :

the circle touches the two coordinate axes at A and B
and the length of $\overline{MO} = 2\sqrt{2}$ length unit.
Find the general equation of the circle M



9

El-Monofia Governorate



**Menouf Directorate
Mathematics Inspection**

First

Multiple choice questions



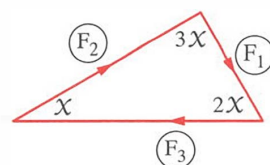
**Interactive
test 9**

Choose the correct answer from those given :

- (1)** The magnitudes of two forces acting at point are 3 , 9 newton and the magnitude of their resultant is R , then $R \in \dots\dots\dots$
(a) $[3 , 9]$ (b) $]3 , 9[$ (c) $[6 , 12]$ (d) $]6 , 12[$
- (2)** The magnitudes of two forces acting at point are 3 , 6 newton and the magnitude of their resultant is $3\sqrt{3}$ newton , then the measure of the angle between the forces is
(a) 30° (b) 90° (c) 120° (d) 150°
- (3)** Two forces of magnitude 2 , 7 newton and their resultant is 5 newton , then the measure of the angle between their resultant and the first force is
(a) π (b) zero (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{3}$
- (4)** $\vec{F}_1 = \vec{i} + k\vec{j}$, $\vec{F}_2 = \vec{j} - \vec{i}$, and their resultant $\vec{R} = 2\vec{j}$, then $k = \dots\dots\dots$
(a) 1 (b) 2 (c) 3 (d) 4
- (5)** In the opposite figure :

Forces is equilibrium , then $F_2 : F_3 = \dots\dots\dots$

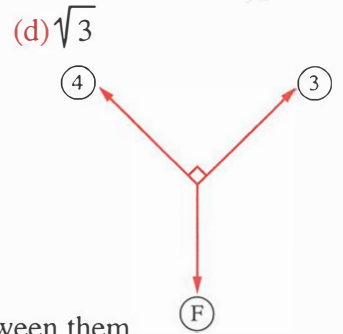
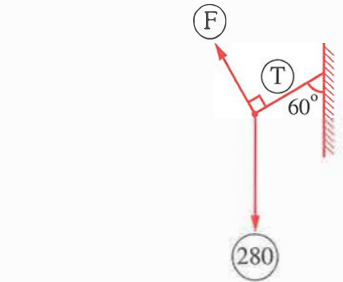
- (a) $\sqrt{3} : 2$ (b) $1 : 2$
(c) $2 : 3$ (d) $1 : \sqrt{3}$



(6) In the opposite figure :

A lamp weight 280 gm.wt. is attach to the end of a string it is an equilibrium under effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60°
 , then $\frac{F}{T} = \dots\dots\dots$

- (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$



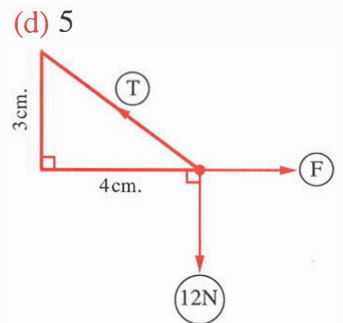
(7) In the opposite figure :

The magnitudes of three coplanar forces 3 , 4 , F
 if the forces are equilibrium , then F =

- (a) 3 (b) 4
 (c) 7 (d) 5

(8) The resultant of the two forces 8 , F gm.wt bisect the angle between them , then F = gm.wt.

- (a) 4 (b) 8 (c) 16



(9) In the opposite figure :

A body is equilibrium , then F =

- (a) 24
 (b) 12
 (c) 16
 (d) 6

(10) $\vec{F}_1 = 2\vec{i} + 3\vec{j}$, $\vec{F}_2 = 3\vec{i} - a\vec{j}$, $\vec{F}_3 = b\vec{i} + 7\vec{j}$ they are equilibrium , then $a - b = \dots\dots\dots$

- (a) 10 (b) 5 (c) 15 (d) 20

(11) The magnitudes of two forces acting at point are 8 , 6 newton , then the value of the resultant may be equals

- (a) 15 (b) $\sqrt{3}$ (c) 12 (d) 1

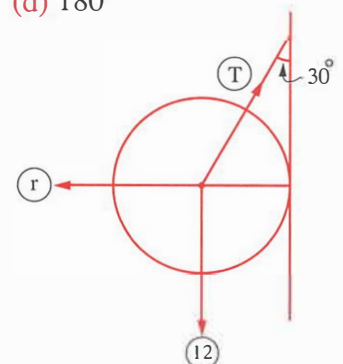
(12) If the resultant between two forces has greatest value , then the measure of the angle between them equal

- (a) zero (b) 60° (c) 120° (d) 180°

(13) In the opposite figure :

$T - r = \dots\dots\dots$

- (a) $8\sqrt{3}$
 (b) 4
 (c) $4\sqrt{3}$
 (d) 8



- (14) If X and Y are two planes and $X \cap Y = \emptyset$, then X Y
 (a) $//$ (b) $\perp$ (c) $=$ (d) $\subset$
- (15) The diameter length of the circle : $x^2 + y^2 + 4x - 2y - 4 = 0$ equal length unit.
 (a) 6 (b) 2 (c) 12 (d) 24
- (16) A regular quadrilateral pyramid whose base area 100 cm^2 , and its height 12 cm., then its lateral area = cm^2 .
 (a) 520 (b) 260 (c) 130 (d) 360
- (17) The area of the circle whose equation is $(x - 1)^2 + (y + 4)^2 = 49$ equal
 (a) 7π (b) 14π (c) 21π (d) 49π
- (18) The least number of planes that determine a solid is
 (a) 2 (b) 3 (c) 4 (d) 5
- (19) The lateral area of the right circular cone whose radius length of its base 6 cm. and height is 8 cm. = cm^2 .
 (a) 60π (b) 48π (c) 28π (d) 10π
- (20) A right quadrilateral pyramid of height 5 cm. , its base as a rhombus whose diagonal lengths are 6 cm. , 4 cm. , then its volume = cm^3 .
 (a) 10 (b) 24 (c) 20 (d) 30

Second Essay questions

Answer the following questions :

- 1 A right circular cone whose circumference of its base is 6π and its drawer length 5 cm. , find :
 (1) The lateral area. (2) Volume.
- 2 A body of weight 300 dyne is suspended by two perpendicular strings of lengths 60 cm. , 80 cm. the two other ends are fixed at two point on a horizontal line. Find the tension in each of the two strings.

10

El-Gharbia Governorate



Maths Supervision

First Multiple choice questions

Choose the correct answer from those given :

- (1) If $\vec{F}_1 = 2\vec{i} - 2\vec{j}$, $\vec{F}_2 = 4\vec{i} - 8\vec{j}$, $\vec{R} = 2a\vec{i} - 3b\vec{j}$, then $a + b =$
 (a) 3 (b) $3\frac{1}{3}$ (c) $6\frac{1}{3}$ (d) 12



Interactive
test 10

- (2) If $\vec{F}_1 = (a, 7)$, $\vec{F}_2 = (-5, -b)$, $\vec{F}_3 = (1, 1)$, are in equilibrium, then $(a, b) = \dots\dots\dots$
 (a) (4, 2) (b) (1, 2) (c) (4, 8) (d) (-4, -8)
- (3) Which two forces from the following pairs, could not have resultant with magnitude = 4 newton $\dots\dots\dots$
 (a) 2 newton, 4 newton (b) 3 newton, 3 newton
 (c) 2 newton, 6 newton (d) 3 newton, 8 newton
- (4) If a body of weight x kg.wt on an inclined smooth plane with 30° to the horizontal, then component of its weight on the direction of plane = $\dots\dots\dots$ kg.wt.
 (a) $0.5x$ (b) $x\sqrt{2}$ (c) $2x$ (d) $x\sqrt{3}$
- (5) A uniform smooth sphere of weight 1.5 gm.wt and radius length 25 cm., is suspended at a point on its surface by a light string of length 25 cm. and the other end of the string is fixed at the point in vertical smooth wall, if the sphere is in equilibrium, then the tension in the string = $\dots\dots\dots$ gm.wt.
 (a) $2\sqrt{3}$ (b) 6 (c) $\sqrt{3}$ (d) 3
- (6) A body of weight 18 newton. is placed on a smooth plane inclines to the horizontal by angle of measure 30° and kept in equilibrium by a horizontal force of magnitude F newton, then the magnitude of the reaction of the plane on the body = $\dots\dots\dots$ newton.
 (a) $6\sqrt{3}$ (b) $8\sqrt{3}$ (c) $12\sqrt{3}$ (d) $10\sqrt{3}$
- (7) If θ is the angle between two forces 2 newton, 6 newton. and $\theta \in]0, \pi]$, then the magnitude of their resultant in newton $\in \dots\dots\dots$
 (a) $]4, 8[$ (b) $[4, 8[$ (c) $]4, 8]$ (d) $[5, 8]$
- (8) Two forces of magnitudes 7, F gm.wt and the resultant bisects the angle between them, then $F = \dots\dots\dots$ gm.wt.
 (a) 7 (b) 8 (c) 9 (d) 5
- (9) ABCDOH is a regular hexagon, force 20 newton. acts on $\overrightarrow{AD}$, then the components of the force in direction $\overrightarrow{AC}$, $\overrightarrow{AH}$ respectively are $\dots\dots\dots$ newton.
 (a) $10\sqrt{3}$ and 10 (b) $5\sqrt{3}$ and 10 (c) 10 and $10\sqrt{3}$ (d) $20\sqrt{3}$ and 20
- (10) A body of weight (W) newton. is suspended by two light strings inclined to the vertically by angle θ° and 30° the body becomes in equilibrium when the tension of the first string equals 12 newton. and the other $12\sqrt{3}$ newton, then the weight of the body $W = \dots\dots\dots$ newton.
 (a) 60 (b) 25 (c) 36 (d) 24
- (11) Two perpendicular forces of magnitudes $2F - 5$, $F + 2$ newton. act at a particle, and the magnitude of their resultant is $3\sqrt{5}$ newton., then $F = \dots\dots\dots$ newton.
 (a) 2 (b) 3 (c) 4 (d) 5

- (12) If O is the origin of perpendicular Cartesian coordinate plane and $\vec{F} = (8 \text{ kg.wt}, 135^\circ)$ is a force acts at the point O, then the component of $\vec{F}$ in direction of y-axis equals
- (a) $-4\sqrt{2}$ (b) $4\sqrt{2}$ (c) $4\sqrt{3}$ (d) 4
- (13) A regular pyramid whose volume is 12 cm^3 and its base area is 4 cm^2 , then its height = cm.
- (a) 3 (b) 6 (c) 9 (d) 2
- (14) A right circular cone, the radius length of its base = 15 cm. and its height = 20 cm., then its lateral area = cm^2
- (a) 375π (b) 600π (c) 1500π (d) 1875π
- (15) Cylinder and cone have same base and height, then $\frac{\text{The volume of the cylinder}}{\text{the volume of the cone}} = \dots\dots\dots$
- (a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{3}{1}$
- (16) The least number of planes can be formed a solid is
- (a) 2 (b) 3 (c) 5 (d) 4
- (17) Two circles whose centres M, N are touching internally if $r_1 = 5 \text{ cm}$, $r_2 = 8 \text{ cm}$, then MN = cm.
- (a) 13 (b) 3 (c) 4 (d) 1.5
- (18) The number of planes passes through two given points is planes.
- (a) 0 (b) 1 (c) 2 (d) infinite
- (19) If X-axis intersects the circle whose equation $(x - 3)^2 + (y + 2)^2 = 20$ at two points A and B, then the length of $\overline{AB}$ = unit length.
- (a) 6 (b) 4 (c) 8 (d) 7
- (20) A right circular cone its base touch the two positive axes in X y-plane and its drawer is twice its radius base length, the volume of a cone is $72\sqrt{3}\pi \text{ cm}^3$, then the equation of its base is
- (a) $(x - 5)^2 + (y - 5)^2 = 25$ (b) $(x - 3)^2 + (y - 3)^2 = 9$
 (c) $(x - 6)^2 + (y - 6)^2 = 36$ (d) $(x - 2)^2 + (y - 2)^2 = 4$

Second

Essay questions

Answer the following questions :

- 1 Prove that the two circles : $x^2 + y^2 - 6x - 4y + 12 = 0$, $x^2 + y^2 + 2x - 4y - 4 = 0$ touch each other and find the coordinates of the point of tangency, then find the circle equation whose centre is the point of tangency and passes through the centre of second circle.

- 2** ABCDHE is a uniform hexagon, the forces of magnitudes 2 , $4\sqrt{3}$, 8 , $2\sqrt{3}$ and 4 newton. act at point A in directions of $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$, $\overrightarrow{AH}$, $\overrightarrow{AE}$ respectively. find the magnitude and the direction of their resultant.

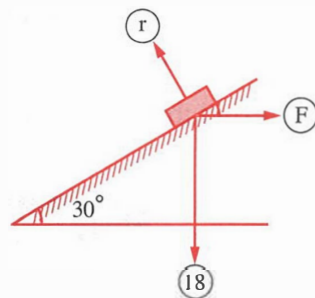
11**Dakahlia Governorate****Maths Inspection****First****Multiple choice questions**

Choose the correct answer from those given :

- (1) Two forces of magnitudes $3F$, $2F$ and the magnitude of their resultant is $5F$, then the measure of the angle enclosed between the two forces equals
- (a) zero (b) 20° (c) 60° (d) 180°
- (2) Two forces of magnitudes 5 , 3 newton and the measure of the angle enclosed between them is 60° , then the magnitude of their resultant R equals
- (a) 2 (b) 8 (c) 7 (d) 5
- (3) $\vec{F}_1 = 2\vec{i} + 3\vec{j}$, $\vec{F}_2 = \vec{i} + \vec{j}$ where F_1, F_2 measured with Newton, then the magnitude of their resultant equals
- (a) $\sqrt{2}$ (b) $\sqrt{13}$ (c) $\sqrt{5}$ (d) 5
- (4) Two forces of equal magnitude act at a point, inclosing between them an angle of measure $\frac{\pi}{3}$, if the magnitude of their resultant is 3 N , then the value of each force is N
- (a) $\frac{3}{2}$ (b) $\sqrt{3}$ (c) 3 (d) $3\sqrt{3}$
- (5) If the resultant of two forces act at a point reaches its maximum value, then the angle between the two forces equals
- (a) 0° (b) 60° (c) 120° (d) 180°
- (6) The maximum and minimum resultant of the two forces of magnitudes 8 N , 13 N respectively are
- (a) $13, 8$ (b) $13, 5$ (c) $21, 8$ (d) $21, 5$
- (7) The forces of magnitudes F , 12 , $8\sqrt{2}$, $10\sqrt{2}$, k newton act on a particle in the directions of East, North, Western North, Western South and South respectively. If the magnitude of the resultant = 4 Newton due to North, then $F - K = \dots\dots\dots$ newton
- (a) 24 (b) 12 (c) 27 (d) 6

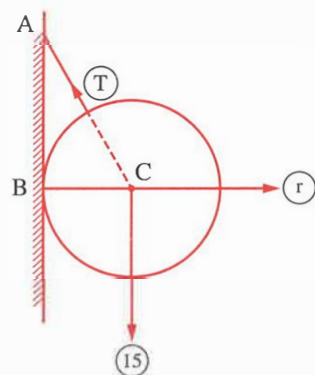
(8) In the opposite figure :

A body of weight 18 newton is placed on a smooth plane inclined to horizontal at an angle of measure 30° , it is kept in equilibrium by a horizontal force of magnitude F newton, then $F + r = \dots\dots\dots$ newton.



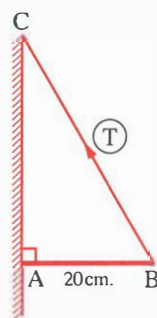
- (a) $18\sqrt{3}$ (b) $12\sqrt{3}$
(c) $6\sqrt{3}$ (d) $24\sqrt{3}$

(9) A solid uniform sphere of weight 15 gm.wt and radius length 10 cm. is in equilibrium by string of length 10 cm. Attached to a point of its surface and the other end of the a string is fixed at a point in the vertical smooth plane above the tangency point, then $(r, T) = \dots\dots\dots$



- (a) $(4\sqrt{3}, 8\sqrt{3})$ (b) $(5\sqrt{3}, 8\sqrt{3})$
(c) $(5\sqrt{3}, 10\sqrt{3})$ (d) $(5, 10)$

(10) $\overline{AB}$ is uniform rod with length 20 cm. and weight 30 newton is connected to a hinge on the vertical wall at A if the rod kept in equilibrium horizontally by a light string connected to the rod at B of the length $20\sqrt{2}$ cm. fixed at a point C on the wall just above A, then magnitude of the reaction of the hinge = $\dots\dots\dots$ newton.



- (a) $15\sqrt{2}$ (b) $10\sqrt{2}$
(c) 15 (d) 10

(11) A uniform rod of weight 24 newton is placed on two smooth planes inclined at two angles of measures $60^\circ, 30^\circ$ to the horizontal, then the magnitude of the pressure on each plane $\dots\dots\dots$ newton.

- (a) 12, 15 (b) $12\sqrt{3}, 10$ (c) $12, 12\sqrt{3}$ (d) 15, 13

(12) If $\vec{F}_1 = (5, -3)$, $\vec{F}_2 = (7, 4)$, then the resultant of the two forces $\vec{R} = \dots\dots\dots$

- (a) $\vec{i} + 12\vec{j}$ (b) $9\vec{i} + 4\vec{j}$ (c) $12\vec{i} + \vec{j}$ (d) $35\vec{i} - 12\vec{j}$

(13) The point that lies on the circle $(x-2)^2 + y^2 = 13$ from the following is $\dots\dots\dots$

- (a) (2, 3) (b) (2, 5) (c) (3, -2) (d) (4, 3)

(14) Number of planes that are passing through two given point is $\dots\dots\dots$

- (a) 1 (b) 3 (c) 2 (d) An infinite number

(15) The lateral surface area of the right cone whose base radius length is 6 cm. and the height of the cone is 8 cm. equals cm^2 .

- (a) 60π (b) 10π (c) 28π (d) 100π

(16) The diameter length of the circle : $x^2 + y^2 - 2x - 6y + 1 = 0$ equal unit length

- (a) 3 (b) 5 (c) 4 (d) 6

(17) A regular quadrilateral pyramid , the side length of its base is 10 cm. , and its slant height is 13 cm. , then its volume is cm^3

- (a) $\frac{1}{3} \times (10)^2 \times 13$ (b) $\frac{1}{3} \times (12)^2 \times 13$ (c) $\frac{1}{3} \times (10)^2 \times 12$ (d) $\frac{1}{3} \times (13)^2 \times 10$

(18) The volume of the right cone whose base is of radius 7 cm. and the length of its drawer is 14 cm. equals cm^3 .

- (a) $49\sqrt{3}\pi$ (b) $49\sqrt{3}$ (c) 49π (d) $\frac{343\sqrt{3}\pi}{3}$

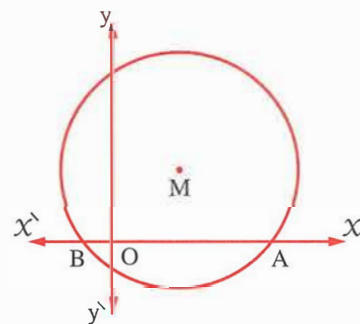
(19) In the opposite figure :

The equation of the circle :

$$(x - 2)^2 + (y - 3)^2 = 25$$

, then AB = length unit.

- (a) 8
(b) 6
(c) 4
(d) 5



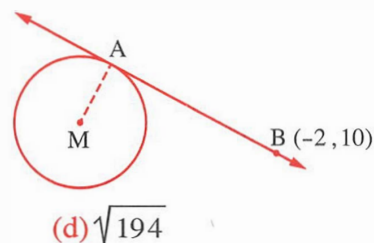
(20) In the opposite figure :

The equation of the circle : $(x - 3)^2 + (y + 2)^2 = 25$

, AB is a tangent to the circle M At A where B (-2 , 10)

, then AB = length unit

- (a) 13 (b) 5 (c) 12



Second Essay questions

Answer the following questions :

1 A cube of wax with edge length 30 cm. transfer into a right circular cone of height 45 cm. Find the length of the radius of the base of the cone , if 8 % of the wax loss during melting and transferring processes. ($\pi = \frac{22}{7}$)

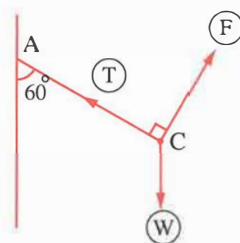
2 A uniform rod of length 100 cm. and weight 150° gm.wt. is hanged freely by two strings and the other ends of the strings are fixed in one point. If the lengths of the two strings are 80 cm. , 60 cm. find the tension in the two strings.



First Multiple choice questions

Choose the correct answer from those given :

- (1) Two perpendicular forces of magnitudes 4 , 3 newton' their resultant = newton
 (a) 6 (b) 7 (c) 1 (d) 5
- (2) Two forces of magnitudes k and $8 - k$, and the resultant bisects the angle between them , then $k =$
 (a) 4 (b) 8 (c) 6 (d) 2
- (3) A body of weight W is placed on a smooth inclined plane with the horizontal by an angle of measure θ then it component in the perpendicular direction to the plane =
 (a) $W \sin \theta$ (b) $W \cos \theta$ (c) $W \tan \theta$ (d) $W \cot \theta$
- (4) **In the opposite figure :**
 A lamp of weight W gm.wt. is attached to the end of a string. It is in equilibrium under the effect of a force perpendicular to the string when it is inclined to the vertical by an angle of measure 60° , then $\frac{F}{T} =$
 (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$
- (5) If three forces are equal in magnitude meeting at a point and in equilibrium , then the measure of the angle between any two of them = -
 (a) 60° (b) 90° (c) 120° (d) 150°
- (6) The number of planes which passes through three collinear points equals
 (a) 1 (b) 2 (c) 3 (d) infinite number
- (7) A regular quadrilateral pyramid , the length of diagonal of its base is $10\sqrt{2}$ cm. , and its height is 6 cm. , then its volume = cm^3
 (a) 100 (b) 200 (c) $100\sqrt{2}$ (d) $200\sqrt{2}$
- (8) A triangular pyramid of regular faces , the length of its edge is 12 cm. , then its total surface area = cm^2
 (a) $36\sqrt{3}$ (b) $72\sqrt{3}$ (c) $144\sqrt{3}$ (d) 144



- (9) A regular quadrilateral pyramid the side length of its base = the length of its slant height, then the ratio between its lateral surface area and its total surface area is

(a) 2 : 3 (b) 3 : 4 (c) 1 : 2 (d) 3 : 5

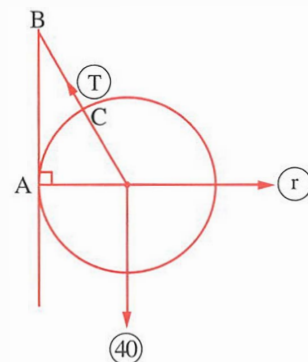
- (10) The volume of a right circular cone is $32\pi \text{ cm}^3$, and its height is 6 cm. , then radius length of its base is cm.

(a) 3 (b) 4 (c) 5 (d) 6

- (11) In the opposite figure :

A smooth sphere of radius length 3 cm. and of weight 40 newton rests against a smooth vertical wall.

It suspended at a point on its surface by means of a string and the other end is fixed to the wall at a point lies directly above the point of tangency of the sphere and the wall , if $BC = 2 \text{ cm}$. , then in case of equilibrium $T + r = \dots\dots\dots$ newton



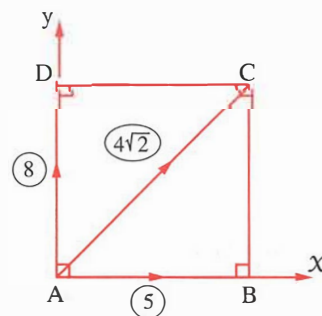
(a) 240 (b) 120 (c) 60 (d) 80

- (12) Resolve a force 100 newton act in North in two perpendicular directions the first at the North of West , then the other component is

(a) 50 (b) 60 (c) $50\sqrt{2}$ (d) $60\sqrt{2}$

- (13) In the opposite figure :

ABCD is a square , the forces of magnitudes 5 , 8 , $4\sqrt{2}$ newton act on $\overrightarrow{AB}$, $\overrightarrow{AD}$ and $\overrightarrow{AC}$ respectively , then the polar form of the resultant is



(a) (5 , 54°) (b) (15 , 60°)
(c) (15 , $53^\circ 8'$) (d) (13 , 90°)

- (14) A body of weight 6 kg.wt. is placed on a smooth inclined plane to the horizontal at an angle of measure 30° , is in equilibrium under the effect of a horizontal force , then the reaction of the plane on the body = kg.wt.

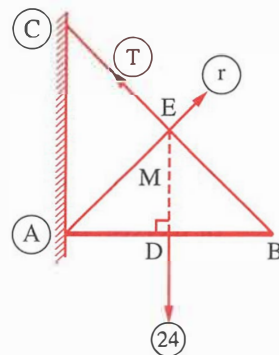
(a) $2\sqrt{3}$ (b) $4\sqrt{3}$ (c) $12\sqrt{3}$ (d) $8\sqrt{3}$

- (15) Given that : $\vec{F}_1 = 3\hat{i} - 2\hat{j}$, $\vec{F}_2 = a\hat{i} - \hat{j}$, $\vec{F}_3 = 4\hat{i} - b\hat{j}$ and their resultant $\vec{R} = 6\hat{i} - 4\hat{j}$, then $a + b = \dots\dots\dots$

(a) 2 (b) -2 (c) 0 (d) -1

(16) In the opposite figure :

$\overline{AB}$ is a uniform rod with length 60 cm. and weight 24 newton is attached with a vertical wall by a hinge at A , the rod is kept in equilibrium horizontally by a mean of a light string connected by its ends with the rod at B and with the vertical wall at the point C above A where $AC = 80$ cm. , then $(T, r) = \dots\dots\dots$



- (a) (10 , 10) (b) (15 , 15) (c) $(2\sqrt{10} , 2\sqrt{10})$ (d) $(5\sqrt{2} , 5\sqrt{2})$

(17) The right cone is formed from the rotation of a right-angled triangle with complete revolution about one of

- (a) its diameter
(b) any straight line in the plane
(c) sides of the right angle
(d) straight line passes the vertex and parallel the opposite side

(18) The centre of the circle : $x^2 + y^2 - 6x + 30y = 5$ is

- (a) (3 , 10) (b) (3 , 15) (c) (3 , - 15) (d) (- 3 , 15)

(19) The length of the tangent from (3 , 3) to the circle : $x^2 + y^2 - 6x + 4y + 4 = 0$ is length unit.

- (a) 5 (b) 2 (c) 3 (d) 4

(20) If the two forces 5 , 12 kg.wt. acts in a point , and there resultant $\in [13 , 17]$ then the measure of the angle between them $\in \dots\dots\dots$

- (a) $[0^\circ , 180^\circ]$ (b) $[0^\circ , 90^\circ]$ (c) $[90^\circ , 180^\circ[$ (d) $]0^\circ , 90^\circ]$

Second

Essay questions

Answer the following questions :

1 Find the lateral area of the right circular cone where the circumference of its base is 88 cm. and its height is 20 cm. ($\pi = \frac{22}{7}$)

2 Four coplanar forces act on a particle the first of magnitude 4 newton acts in the Eastern direction and the second of magnitude 2 newton , acts in direction 60° North of the East , the third of magnitude 5 newton , acts in direction 60° North of the West and the fourth of magnitude $3\sqrt{3}$ newton acts in direction 60° West of the South. Find the magnitude and direction of their resultant.



First

Multiple choice questions

Choose the correct answer from those given :

- (1) Two forces $F_1 = 3$ newton and $F_2 = 5$ newton act at a point. The measure of the angle between them is 60° , then $R = \dots\dots\dots$ newton
 (a) 2 (b) 5 (c) 7 (d) 8
- (2) Two forces of magnitudes $5F$ and $4F$ act at a point. The magnitude of their resultant is $9F$, then measure of the angle between them = $\dots\dots\dots^\circ$
 (a) zero (b) 60 (c) 90 (d) 180
- (3) A body of weight 10 N is placed on a plane that is inclined at 30° to the horizontal. resolve its weight into two components , then the component in the direction of the plane = $\dots\dots\dots$
 (a) 5 (b) 7 (c) 9 (d) 10
- (4) If $F_1 = (-4, 2)$, $F_2 = (5, -7)$, $F_3 = (2, 9)$, then the magnitude of the resultant of forces = $\dots\dots\dots$
 (a) 8 (b) 7 (c) 6 (d) 5
- (5) The force R is resolved into two components F_1 and F_2 the force R bisects the angle between the directions of F_1 and F_2 , then $\dots\dots\dots$
 (a) $F_1 > F_2$ (b) $F_1 < F_2$ (c) $F_1 = F_2$ (d) Otherwise
- (6) The magnitude of resultant of two equal and perpendicular forces each one of them equal 9 newton is $\dots\dots\dots$ newton.
 (a) 9 (b) $9\sqrt{2}$ (c) 18 (d) 20
- (7) If three coplanar and equilibrium forces are represented by the sides of a triangle taken in one cyclic order , then the lengths of the sides of the triangle are proportional to $\dots\dots\dots$
 (a) the magnitude of the forces.
 (b) the squares of the magnitudes of the forces.
 (c) the square of the angle measures.
 (d) the angle measures.
- (8) Two forces of magnitudes 35 N and 91 N are acting at a particle. Given that the resultant is perpendicular to the first force , then the magnitude of the resultant = $\dots\dots\dots$
 (a) 100 (b) 84 (c) 126 (d) 90
- (9) A body weighing W newton is placed on a smooth plane inclined at 45° to the horizontal kept in equilibrium under the action of a horizontal force of magnitude 33 newton , then the weight of the body $W = \dots\dots\dots$ newton.
 (a) 38 (b) 33 (c) 46.66 (d) 75.15

- (10) The magnitude of the smallest resultant of two forces of magnitudes 6 newton and 8 newton is
 (a) 1 (b) 2 (c) 7 (d) 14
- (11) The resultant of two forces 5 newton and 9 newton could be
 (a) 2 (b) 3 (c) 7 (d) 15
- (12) The least number of coplanar unequal in magnitude forces could be in equilibrium is
 (a) 1 (b) 2 (c) 3 (d) 4
- (13) Number of planes that are passing through three collinear points
 (a) 0 (b) 1 (c) 2 (d) an infinite number
- (14) The two not parallel planes are intersecting in
 (a) ray (b) a point (c) a plane (d) a straight line
- (15) The lateral area of a right cone with base radius 5 cm. and height 12 cm. is cm^2
 (a) 31.4 (b) 188.4 (c) 141.3 (d) 204.2
- (16) A regular quadrilateral pyramid has a volume of 372 cm^3 and a height of 31 cm. , then the length of its base =
 (a) 6 (b) 8 (c) 9 (d) 36
- (17) The equation of the circle whose centre (8 , 4) and radius 9 is
 (a) $(x - 8)^2 + (y - 4)^2 = 9$ (b) $(x - 8)^2 + (y - 4)^2 = 81$
 (c) $(x - 8)^2 + (y - 4)^2 = 3$ (d) $(x + 8)^2 + (y + 4)^2 = 81$
- (18) The radius of the circle $x^2 + y^2 + 6x - 8y = 0$ is
 (a) 4 (b) 5 (c) 10 (d) 25
- (19) The circle $(x - 5)^2 + (y + 4)^2 = 25$ touches
 (a) x-axis (b) y-axis (c) origin (d) the straight line $x = y$
- (20) The volume of a right cone with base diameter 6 cm. and height 4 cm. is cm^3
 (a) 28.27 (b) 133 (c) 37.7 (d) 12

Second

Essay questions

Answer the following questions :

- 1 A body weighing 12 newton is attached to one end of a light, inextensible string. The other end of the string is fixed to a vertical wall. A horizontal force holds the body in equilibrium when the measure of the angle between the wall and the string is 30° . Find the tension in the string and the horizontal force.
- 2 A right circular cone has base diameter 10 cm. and height 12 cm. Determine the total area.

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Assiut Governorate



Governmental Language
Schools

First Multiple choice questions

Choose the correct answer from those given :

(1) If a body is kept in equilibrium under action of several forces , then the least number of forces could cause equilibrium equals

- (a) 1 (b) 2 (c) 3 (d) 4

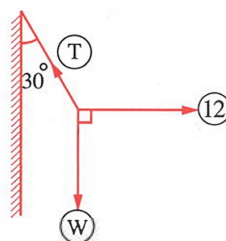
(2) Two forces of magnitudes 3 , 5 newton , then their resultant $\in$

- (a) [3 , 5] (b)]3 , 5[(c) [2 , 8] (d)]8 , 12[

(3) In the opposite figure :

A body is suspended by the end of a string and its other end fixed at the ceiling of a room.

A horizontal force of magnitude 12 gm.wt. pulled the body until the string inclines to the vertical by an angle of measure 30° , then the weight of the body = gm.wt.

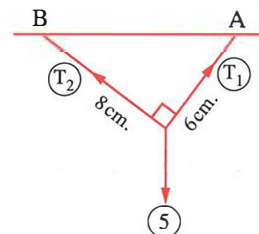


- (a) $12\sqrt{3}$ (b) $3\sqrt{12}$
(c) 12 (d) 15

(4) In the opposite figure :

$$T_1 \times T_2 = \dots\dots\dots$$

- (a) 6
(b) $6\sqrt{13}$
(c) $3\sqrt{13}$
(d) 12



(5) If $\vec{F}_1 = 2\vec{i} + 3\vec{j}$, $\vec{F}_2 = \vec{i} + \vec{j}$, then the magnitude of their resultant force unit

- (a) $\sqrt{2}$ (b) $\sqrt{13}$ (c) 5 (d) 25

(6) In the regular pyramid : the height the slant height.

- (a) < (b) > (c) $\leq$ (d) $\geq$

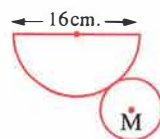
(7) The point that lies on the circle $(x - 2)^2 + y^2 = 13$ from the following is

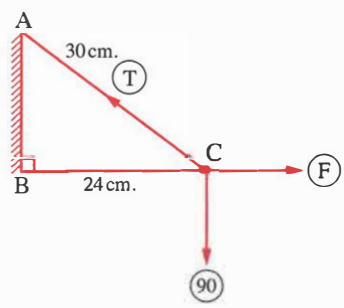
- (a) (2 , 3) (b) (3 , -2) (c) (2 , 5) (d) (4 , 3)

(8) If we fold the shown net , it becomes a cone.

Its base radius length is cm.

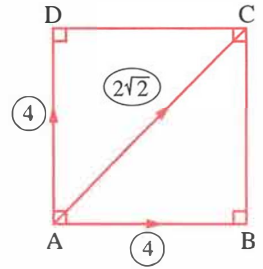
- (a) 2.5 (b) 4
(c) 8 (d) 16



- (9) Two forces of magnitudes 5 , 3 newton and the measure of the angle enclosed between them is 60° , then the magnitude of their resultant R equals
- (a) 7 (b) 2 (c) 8 (d) 5
- (10) The area of the circle whose equation is : $(X - 5)^2 + (y + 4)^2 = 7$ equals square unit.
- (a) 3.5π (b) 7π (c) 12.25π (d) 49π
- (11) In the opposite figure :
- A body of weight 90 gm.wt. is attached to the end of a string of 30 cm. long the body is pulled by a horizontal force. It comes to equilibrium when it is 24 cm. apart from wall , then $T - F =$ gm.wt.
- (a) 150 (b) 120
(c) 50 (d) 30
- 
- (12) Which of the following sets of forces could not be in equilibrium ?
- (a) 11 , 7 , 5 newton (b) 4 , 6 , 8 newton
(c) 10 , 10 , 8 newton (d) 8 , 4 , 14 newton
- (13) The least number of planes that determine a solid is
- (a) 2 (b) 3 (c) 4 (d) 5
- (14) A regular quadrilateral pyramid whose lateral area = 30 cm^2 , and its slant height = 5 cm. , then its base perimeter = cm.
- (a) 12 (b) 24 (c) 36 (d) 6
- (15) A force of magnitude 12 newton , acts in the direction of 30° north of west and is resolved into two perpendicular directions , then the magnitude of its component in the west direction = newton.
- (a) 6 (b) 12 (c) $12\sqrt{3}$ (d) $6\sqrt{3}$
- (16) A triangular pyramid of regular faces , its edge length 6 cm. , then its volume = cm^3 .
- (a) 36 (b) $18\sqrt{2}$ (c) $216\sqrt{2}$ (d) 216
- (17) All of the following cases form a plane except
- (a) a straight line and a point do not belong to it.
(b) two parallel and not coincident straight lines.
(c) two intersecting straight lines.
(d) two skew straight lines.

(18) In the opposite figure :

ABCD is a square , the forces 4 , $2\sqrt{2}$, 4 newton act in the directions of $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{AD}$ respectively , then the magnitude of their resultant = newton.



- (a) 6 (b) $10\sqrt{2}$
(c) $6\sqrt{2}$ (d) $6\sqrt{3}$

(19) Two forces of magnitudes F and $\sqrt{3}F$ act at a particle , if the magnitude of their resultant is $2F$, then the measure of the angle between the two forces =

- (a) 90° (b) 60° (c) 120° (d) 30°

(20) A body of weight W is placed on an inclined plane makes angle of measure θ to the horizontal , then the component of its weight in direction of line of greatest slope equals

- (a) $W \sin \theta$ (b) $W \cos \theta$ (c) $W \tan \theta$ (d) $W \cot \theta$

Second Essay questions

Answer the following questions :

1 A uniform smooth sphere of weight 10 gm.wt. and radius length 30 cm. is hanged from a point on its surface by a light string of length 30 cm. and the other end of the string is fixed in a point on a vertical smooth wall. Find in the case of equilibrium each of :

- (1) The tension in the string.
(2) The reaction of the wall on the sphere.

2 Form the general equation of the circle in which $\overline{AB}$ is diameter of it where :
A (6 , - 4) , B (0 , 2)

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Aswan Governorate



Maths Inspection

First Multiple choice questions

Choose the correct answer from those given :

(1) A force of magnitude 6 newton acts in direction of North. It is resolved into two perpendicular components , so its component in direction of the East of magnitude newton.

- (a) zero (b) 3 (c) 2 (d) 6

- (2) The area of a regular polygon with 12 sides. If the circle $x^2 + y^2 - 16 = 0$ passes through its vertices = square unit.
 (a) 24 (b) 36 (c) 48 (d) 72
- (3) If a body of weight (W) is placed on an inclined smooth plane makes an angle of measure (θ) with the horizontal , then its weight component in direction of the plane is
 (a) $W \sin \theta$ (b) $W \cos \theta$ (c) $W \tan \theta$ (d) $W \csc \theta$
- (4) A regular quadrilateral pyramid , if the length of its base side is 6 cm. the length of its lateral edge is 8 cm. , then the length of its height = cm.
 (a) $5\sqrt{2}$ (b) $\sqrt{46}$ (c) $\sqrt{85}$ (d) 48
- (5) Three coplanar forces meeting at a point , their magnitudes are 40 , 30 , 40 newton , the first is in direction 60° West of North , the second is towards West and the third in the direction 30° North of East , then the magnitude of their resultant equal newton.
 (a) 30 (b) 110 (c) 60 (d) 50
- (6) If the magnitude of the resultant of two forces act at a point is maximum value , then the measure of the angle between the two forces equal
 (a) 180° (b) 120° (c) zero (d) 60°
- (7) If the total area of a triangular regular faces pyramid is $9\sqrt{3} \text{ cm}^2$, then the length of its edge cm.
 (a) 3 (b) 9 (c) 27 (d) 2
- (8) The resultant of two forces 6 newton and 8 newton could be newton.
 (a) 20 (b) 15 (c) 12 (d) 1
- (9) The circumference of the circle whose equation is $x^2 + y^2 = 16$ is length units.
 (a) 4π (b) 8π (c) 64π (d) 16π
- (10) Two forces act at a point. The magnitude of the two forces are 6 , 10 newton and their resultant is perpendicular to one of them , then the magnitude of their resultant = newton.
 (a) 8 (b) 3 (c) 4 (d) 16
- (11) If A , B and C are three points determine a plane , then
 (a) $AB = BC = AC$ (b) $AB + BC = AC$ (c) $AB + BC > AC$ (d) $AB + BC < AC$
- (12) Two forces act at a point. The magnitude of the two forces are F , 2 newton and the measure of the angle between them is 60° , if their resultant equal $2\sqrt{3}$ newton , then F = newton.
 (a) 2 (b) 4 (c) 8 (d) 12

- (13) Two forces of magnitudes $3\sqrt{2}$ and 6 newton and the measure of the angle between them is 135° , then the measure of the angle between their resultant and the second force is
- (a) 30° (b) 45° (c) 60° (d) 90°
- (14) In the hexagonal pyramid :
number of faces + number of vertices – number of edges =
- (a) 1 (b) 2 (c) 3 (d) 4
- (15) If a force of magnitude (F) is in equilibrium with two forces of magnitudes 3 and 4 newton and the measure of the angle between them is 90° , then $F = \dots\dots\dots$ newton.
- (a) 7 (b) 5 (c) 1 (d) 6
- (16) If the volume of a right circular cone is $9\pi \text{ cm}^3$. And the length of its base radius equals the length of its height, then its base area = cm^2
- (a) 9π (b) 3π (c) 27π (d) 12π
- (17) A body of weight 28 kg.wt. is suspended by two perpendicular strings, if the measure of the angle between one string and the line of the weight is 120° , then the magnitude of the tension of this string equals kg.wt.
- (a) 14 (b) 28 (c) $14\sqrt{3}$ (d) 12
- (18) The point (2, 2) lies the circle whose equation $x^2 + y^2 = 9$
- (a) on (b) outside (c) inside (d) in the center of
- (19) A uniform rod of weight 20 newton which is movable around a hinge at one of its ends is pulled a side by a horizontal force of magnitude 10 newton acting on the other end, then the measure of the angle of inclination of the rod to the vertical when it is in equilibrium =
- (a) 60° (b) 45° (c) 30° (d) 90°
- (20) Two forces of magnitudes 9, 6 newton, the maximum value of their resultant is newton.
- (a) 20 (b) 30 (c) 10 (d) 15

Second**Essay questions****Answer the following questions :**

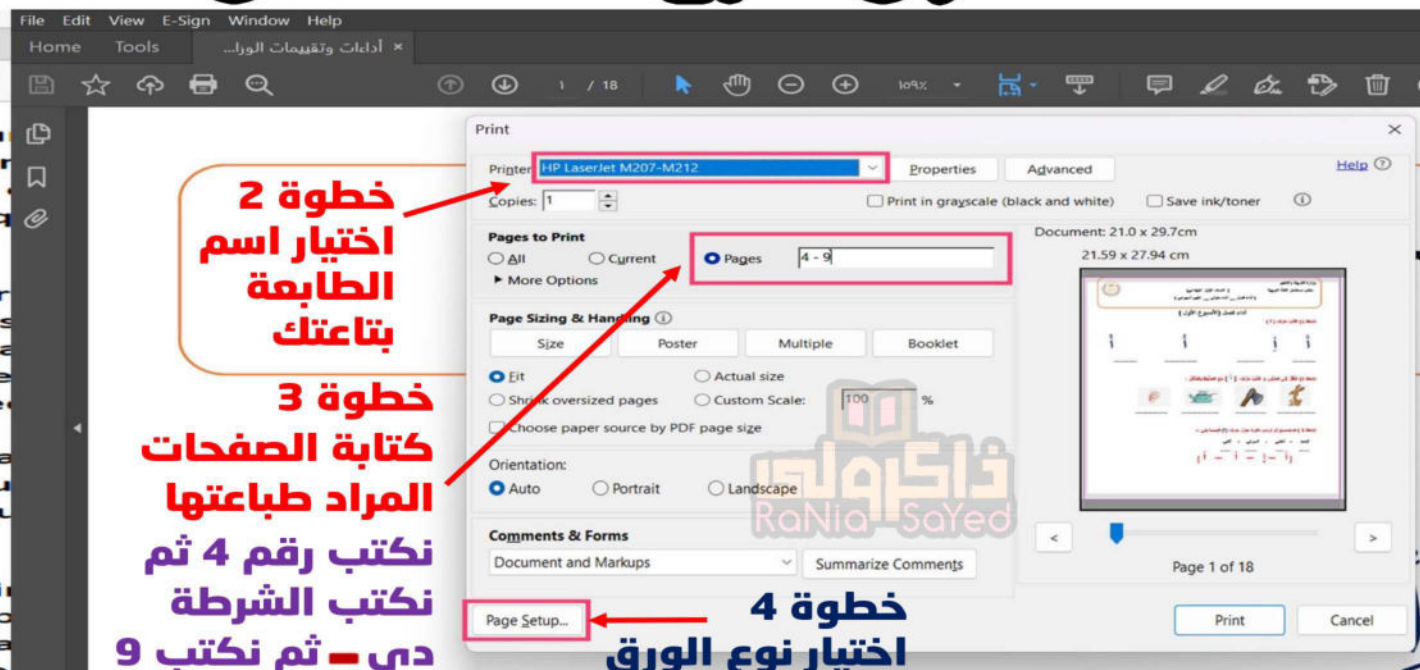
- 1 A metallic sphere of weight 15 kg.wt. is put such that it touches two smooth planes, one of them is vertical and the other inclines to the vertical by an angle of measure 30° . Find the reaction of the two planes.
- 2 Determine the position of the circle $C_1 : (x - 5)^2 + (y + 2)^2 = 4$ with respect to the circle, $C_2 : (x + 7)^2 + (y - 3)^2 = 1$

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



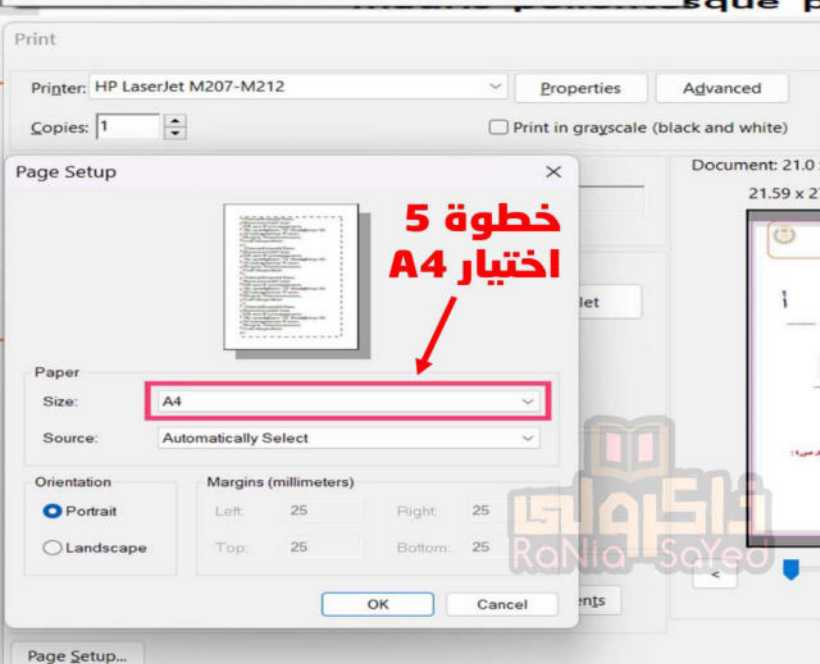
خطوة 1



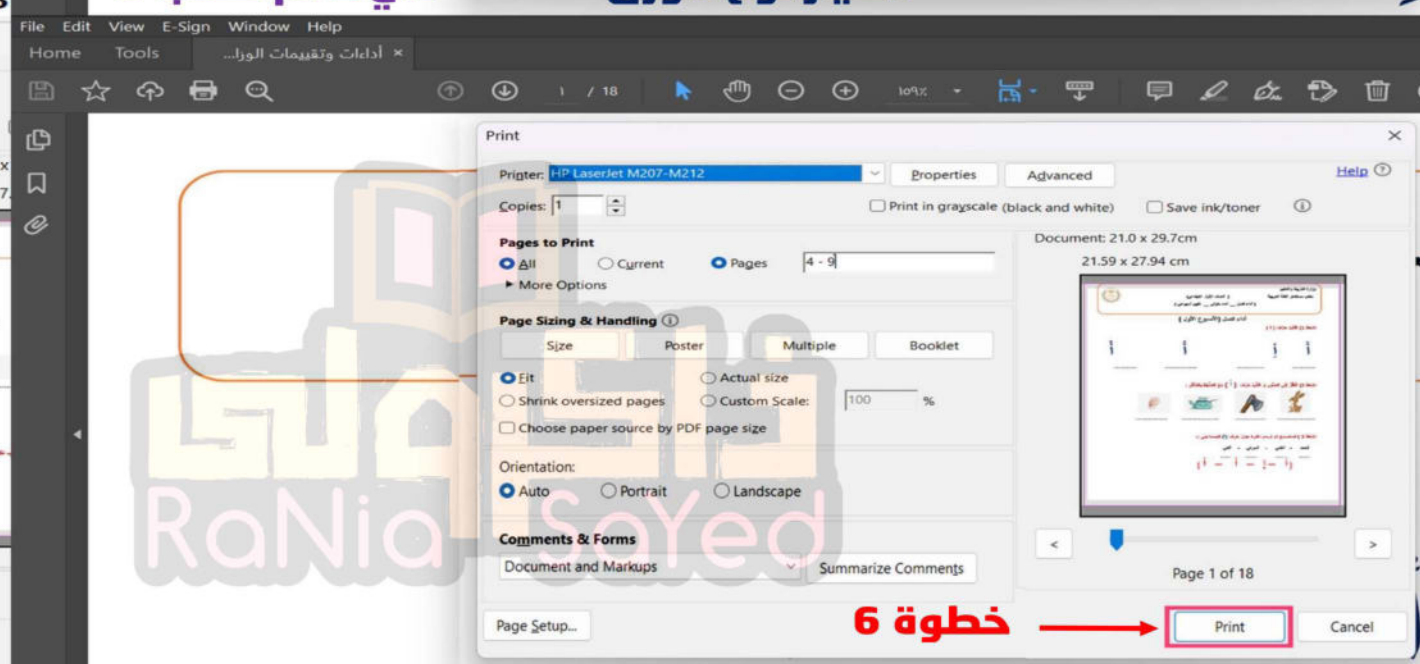
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6